Food Manufacture

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"Jim-Jams."

"THOUSANDS being Slowly Poisoned by the Hidden Perils of the Jam-Pot," is the title of No. 3 of *The Leader's* "Scandals of To-day" series. "It is a fact," says the writer of this amazing article, "that some jams contain poisons more potent than those used by the murderers and poisoners of recent years." Who is going to be the first among jam makers to offer a prize of a free coffin (with brass plate and a supply of nails) to every holder of 500 coupons? No need now to go to the expense of buying a house with a lawn as a reasonable excuse for keeping a supply of weed-killer; all one has to do is to send an occasional assortment of jams to one's particular friend (starting with the author of the above article) and take a sporting chance—sooner or later it is bound to happen! However, before we send our first free hamper to this journalistic genius, perhaps he will tell us where he gets his jam containing "bird seed (to supply the pips)," which is "sold in pennyworths in poor neighbourhoods," as we, too, would like to polish up our "twittering" faculties.

What is Home-made?

"Home-made" has a nice sound about it. When we talk about that delicious tea we had at the end of a twenty-mile walk we still can taste the home-made bread and that beautifully pink home-made gooseberry jam. The term usually implies that the best possible ingredients have been used—in the case of jam, selected fruit and pure cane sugar—since, if the housekeeper is going to spend time on jam-making, she will use the best of ingredients. If people have the opportunity of purchasing home-made jam they are generally prepared to pay a penny or two more per pound, but it was a doubtful piece of enterprise on the part of the Salford trader who advertised some jam as "home-made" which the city analyst found to be made from imported pulp and artificially dyed. In view of the decision of the city stipendiary that a home-made article should be "made of ingredients that the ordinary housewife would use," the proprietor of the shop, who made the jam himself, was cautioned and agreed to discontinue the words "home-made." Similar cases occurred with lemon cheese, one of which contained starch, 38·2 per cent. water, and 5 per cent. of butter, and was described as "home-made." While the term "home-made" was literally correct, there is no doubt that it is misleading in such cases, and its use should be discouraged.

Cake Manufacture.

Commenting in the *Confectioners' Journal* (published in U.S.A.) on the recent book by Bennion and Stewart on *Cake Manufacture and Small Goods Production*, the reviewer concludes with the following: "The fact that such a book has been written, and as the first of a series of others that are to be devoted to the scientific side of food manufacture, is—to the American confectioner—significant in itself. It has taken several years of propaganda by the better-informed members of the industry to begin to arouse a proper recognition of scientific control among American confectioners in general. Here is the baking-confectionery trade in England drawing upon a body of organised scientific work for the material of a technical library, and employing scientifically trained instructors, who are teaching in an actual bakery school, to write it. American bakers have also such a body of scientific work to draw upon. They have their research institute and their school of baking.

"What has the American confectioner of this sort? He has a few books and a few recognised

technical leaders. But he has no properly organised institute to turn to for information, and no school to attend where he may learn, under skilled guidance, how to apply such information as is available to him. It might do confectionery manufacturers good to read this book, whether they make cakes or not."

Colour Tests for Oils.

In a note to the *Analyst* (February, 1931), McCarley refers to some interesting new colour reactions with certain oils and fats. A number of aromatic hydroxy compounds—*e.g.*, phenol, resorcinol, menthol, phloroglucinol, salicylic acid—give well-marked colour reactions with certain oils and fats in the presence of a slight excess of bromine in chloroform solution. About three drops of the oil or melted fat are added to a solution of resorcinol in chloroform, followed by five drops of fairly strongly brominated hydrochloric acid. Cod liver oil goes a pink coloration, which gradually turns to a deep red on standing. Linseed oil gives a deep green and palm oil a pale green. Olive oil, almond oil, and coconut oil give no colour. It is suggested that these phenolic reagents react with those oils which are said to contain vitamin A and which also react with the antimony or arsenic trichloride reagent. Cod liver oil gives by far the most pronounced coloration, and butter fat comes next, though it is not nearly so reactive as cod liver oil. It is interesting to note that the insoluble fatty acids separated from cod liver oil give no definite colours, but the unsaponifiable and alcohol soluble portions, after careful separation of free oil, do give colour reactions. This may be of assistance in locating the fractions of oils which are richest in the vitamin.

Isopropyl Alcohol in Brandy.

The practice of adding isopropyl alcohol to brandy and other spirits is said to be on the increase, particularly on the Continent, and various methods have been tried to detect the adulteration. Of these, Reif's method seems to be the most reliable. Like so many of the newer analytical methods, it is a colour reaction. The sample is distilled on the water-bath until no more alcohol is evolved. The distillate is then shaken with a little absolute alcohol, and a solution of hydroxylamine hydrochloride is added, and the whole shaken for three minutes, after which a little absorbent charcoal is added and the mixture filtered. To the filtrate is added a solution of piperonal in absolute alcohol, followed by strong sulphuric acid. A red colour developing on warming indicates isopropyl alcohol, a green-brown colour its absence. If 30 per cent. acetic acid is then added a rose to red colour, stable for thirty minutes, is a positive reaction, whilst a colourless solution or weak red tinge, stable for a minute and turning yellow-grey or colourless, shows the alcohol to be absent.

Toxicity of Fish Oils.

Biological investigations of fish liver oils some years ago indicated that relatively small amounts (less than 2 per cent. of the diet) had a very deleterious effect. Norris and Church have now completed a systematic study undertaken to determine what factor or factors of the oil were toxic or injurious. Previous work had been carried out to correlate the effect with hypervitaminosis of one of the fat soluble vitamins, but published work on the subject is very contradictory. Norris and Church now find that certain cod liver oils produce symptoms similar to vitamin B deficiency when given in relatively large amounts to rats on a diet containing as much as 10 per cent. yeast. The toxic effect of excess of cod liver oil can be counteracted by giving large amounts of yeast. The authors conclude that the toxic effect of large doses of some cod liver oils is not due to hypervitaminosis caused by excess of vitamins A or D. Continued small doses of iso-amylamine in amounts which may be found in cod liver oil produce paralysis, convulsions, and lack of growth, but the toxic effect may be cured or prevented by added yeast. Continued doses of choline also produced symptoms identical with vitamin B deficiency which may be prevented or cured by yeast. They have found that the quantitative determination of vitamin A in cod liver oil is influenced by the amount of yeast in the basal diet, even when there is sufficient yeast to satisfy the vitamin B requirements under some conditions, and the determinations of vitamin B, by methods of increase in rat weight, where a cod liver oil of unknown toxicity is incorporated in the diet cannot be compared. These important researches may explain some of the discrepancies and variations in both vitamin A and B determinations.

A Food or a Drug?

An interesting situation has arisen out of a prosecution at Eglinton (Donegal). A tradesman was summoned for selling syrup of figs which contained a foreign ingredient—namely, 0·01 per cent. of salicylic acid, as certified by the public analyst. The defence emphasised the point that syrup of figs could in no way be regarded as a food, and therefore there could be no case for the prosecution. The syrup was described by the manufacturers as compound syrup of figs, which indicated that it contained ingredients other than figs, and the very small amount of salicylic acid was added as an antiseptic. After due deliberation and consideration of legal definitions, the magistrates were not prepared to hold that syrup of figs was a food, and the case was therefore dismissed. The interesting part of the case is the intimation of the authorities that now a further prosecution for selling an adulterated drug would probably be instituted. It is a curious point and may

lead to much confusion—is, for example, our morning orange juice a food or a drug? It may be regarded as the latter, as it corrects for a deficiency of vitamin C. Normally, one would place figs and oranges in the category of foods, but is the motive for which they are eaten sufficient to transfer them to the Pharmacopœia? The second prosecution should provide the lawyers with opportunities for a pretty piece of word-play and lengthy arguments on definitions.

Food Law.

In his Annual Report of the Salford City Analyst for 1930, H. E. Monk presents an interesting review of the work of the Department for the past five years, in the course of which he points out that, so far as the Public Analyst is concerned, the law relating to food and drugs is embodied in the following Acts and Regulations: (1) The Food and Drugs (Adulteration) Act, 1928; (2) Sale of Milk Regulations, 1901 and 1912; (3) Sale of Butter Regulations, 1902; (4) Milk and Dairies (Amendment) Act, 1922; (5) Condensed Milk Regulations, 1923 and 1927; (6) Dried Milk Regulations, 1923 and 1927; (7) Public Health (Preservatives, etc., in Food) Regulations.

The first-named Act deals with food and drugs in general and the remainder with special articles. The Food and Drugs (Adulteration) Act, 1928, is simply a re-enactment and consolidation of the previous Sale of Food and Drugs Acts, 1875, 1879, 1899, the Margarine Act of 1877, and the Butter and Margarine Act of 1907. So that although the main Act of our food and drugs code bears a date so recent as 1928, actually it is old legislation. The contention is advanced by Mr. Monk that in some respects this Act is out of date, since it is inadequate to deal with modern aspects of food adulteration and misdescription, and that new legislation is urgently needed to this end. In his opinion, the most important alterations that are required in existing law are:

1. A more stringent and positive definition of what constitutes adulteration to replace the present definition contained in Section 2 of the 1928 Act.

2. The setting up of standards for a number of articles, and the provision of powers whereby standards for any article may in future be defined by Regulation.

3. Considerable extension of provision dealing with labelling, description, and advertisement.

Jam Standards.

Last year, as the Salford Report reminds us, was notable for the appearance of the jam standards of the Food Manufacturers' Federation. These represent an agreement among the manufacturers of jam who are members of the Food Manufacturers' Federation (and this includes about 95 per cent. of the manufacturers in the country) to conform to certain standards which have been agreed upon among themselves after consultation with the Society of Public Analysts. They have also agreed to a certain standardisation in the labelling of their products. Briefly, the following agreement has been reached:

1. Standards are fixed for first quality ("Full Fruit Standard") and second quality ("Lower Fruit Standard") jams.

2. The standards are a minimum percentage of soluble solids and a minimum fruit content for each variety of jam.

3. No jams are to be manufactured below the agreed standards.

4. The use of citric, tartaric, and malic acids is permissible where necessary, as is also that of permitted artificial colouring matter, without declaration on the label.

5. Added fruit juice or pectin. These may be used without declaration in first quality jams, but their presence in second quality jams must be declared in type of equal size to that employed for the name of the fruit used.

6. In mixed jams the fruit present in least amount must be named last in the label.

These standards may not be ideal in every respect; they do, however, represent a real advance. Moreover, the initiative in this case has been taken by the trade itself without waiting for legislation; as a result, both the manufacturer and the consumer should benefit.

New Preservatives.

The Salford Report draws attention to the entirely new range of preservatives developed in Germany, concerning which Dr. T. Sabalitschka, of the University of Berlin, gave a full account in the January issue of *The Manufacturing Chemist*. These are esters of para-hydroxybenzoic acid, a derivative of benzoic acid, which is allowed in limited amounts in certain foodstuffs in this country. These esters are marketed under the names of Nipagin, Nipasol, and Nipacombin. Extensive claims are made for these substances, and they are stated to be entirely free from irritant properties, and to be two to four times less toxic than benzoic acid. Time will show whether these claims are justified, but, in Mr. Monk's opinion, their use in this country would be illegal, even in those articles in which benzoic acid and benzoates are permitted.

Empire Soya Beans.

Attention has already been drawn to the advantages which would attend the cultivation of the soya bean within the Empire and its more extended employment as an economic and nutritious ingredient

of foodstuffs. Though the soya bean has for centuries formed one of the staple foods of the East, it is not yet consumed to any extent by Western nations, in spite of the fact that it is one of the most nutritious of foods. Compared with wheat flour, for example, the flour from the soya bean contains about four times as much protein and about fifteen times as much fat; it contains organically combined phosphates, is a satisfactory source of vitamins, and is practically free from starch. Apart from its use as a food, it has a remarkable range of the uses in industry.

Undoubtedly its general adoption as an article of diet has been retarded by two factors—viz., remarkably little research has been devoted to its commercial cultivation and, until recently, no way was known of rendering it palatable to Westerns without diminishing its food value. The second difficulty has been overcome before the first; soya bean flour free from objectionable taste, and retaining, for all practical purposes, the original composition of the beans, is now available.

Soya Bean Cultivation.

Two years ago considerable interest was aroused by articles in the daily Press announcing the success of experimental cultivation of the bean in England by J. L. North, the Curator of the Royal Botanic Society. Details of the experiments were given in the *Quarterly Summary*, April, 1929, of the Royal Botanic Society of London. Mr. North stated that he found the soya to be one of the easiest of plants to cultivate, and that successful tests have been carried out in various places in the South-Eastern districts. Sowing is done in early May, and harvesting in September. A light soil is best, with plenty of space between the rows, and a freedom from weeds.

Further progress in these efforts have been made. Mr. North informs us that last year a variety of soya which had successfully stood the test of seven years' trials in various parts of England was put upon the market by Messrs. Sutton, of Reading, under the name of "First of All," and that this is now being distributed to farmers as a crop plant. Some time must elapse before it can be grown in quantity, but eventually it should provide a crop unique in this country—a source of both oil and food.

Spray Residues.

Although hydrochloride acid is an effective agent for removal of spray residues from apples, it sometimes fails with fruits which have been oil-sprayed, or which have become waxy. Recently, however, it has been shown (Neller, *Ind. and Eng. Chem.*, 1931, p. 323) that a thorough cleaning can be obtained by first dipping the apples in certain wax solvents, preferably methanol, after which a cold hydrochloric acid wash will dissolve and remove practically all lead arsenate residue.

Benzoic Acid.

In the detection of benzoic acid in jams, fruit juices, and margarine, Dingemans (*Chem. Weekblad.*, 1930, p. 640) has pointed out that it is not always satisfactory to apply the colour test based on the nitration to *m*-dinitrobenzoic acid and treatment with ammonia and ammonium sulphide. A more sensitive test is to nitrate and add hydroxylamine hydrochloride. If salicylic acid is present, it must be first oxidised with alkaline permanganate.

Honey Spoilage.

Lockhead and Farrell have been examining the factors causing fermentation spoilage of honey (see *Canadian Journal of Research*, pp. 95-103, August, 1930). It is now generally recognised that this is due to sugar-tolerant yeasts, capable of restraining the growth of the ordinary yeasts; tests indicate that infection is constantly present. Strict sanitary precautions during production help to prevent loss by spoilage, but these alone are not sufficient. The authors indicate that sodium benzoate, sulphite, and bisulphite are effective preservatives.

Burmese Confectionery Trade.

A decline was registered in the import trade of confectionery in Burma during the year ended March 31, 1929, due to economic depression and the increased production of sweets by Rangoon confectioners. Imports during the two years ended March 31, 1928 and 1929, were officially reported as follows:

	Year ended March 31.	
	1928.	1929.
Countries of Origin.	*Pounds.*	*Pounds.*
United Kingdom	212,912	146,496
Netherlands	21,392	1,120
Japan	67,536	43,904
United States	8,064	5,712
Other Countries	73,472	35,168
Totals	383,376	232,400

The influence of the British majority is evidenced in the sale of typically English confections, such as toffee. American chewing-gum is sold in this market in relatively small quantities.

Java Confectionery Firm.

A firm known as Naamloose Vennootschap Handelmaatschappij, "C. E. Morton-Java," capitalised at 600,000 guilders, has been established with its head offices at Soerabaya, Java. This firm proposes to manufacture candy, and to purchase, import, and export various types of foodstuffs.

The Manufacture of Lemon Curd

By W. H. TAYLOR
(Late Manager, Messrs. Lipton, Ltd.)

Some practical hints by an experienced man on the manufacture of lemon curd.

FOR SOME reason or other this article of food is packed and known by two different names—viz., lemon curd and lemon cheese—and either name is generally accepted by the consumer to mean one and the same thing. Quite recently I have noticed, however, that certain makers have hooked an extra name on to it by using the word "conserve." Whichever name is correct and is adopted, one thing is certain—the commodity is growing rapidly in public favour and demand.

For many years it was looked upon by many jam makers as a side line which could be manufactured in the off season, and was chiefly packed and sold in small fancy jars and vases; but to-day it is being packed more and more in the universal 1-lb. and 2-lb. jam jar, and is certainly becoming to many manufacturers a line of considerable importance.

What is meant by the name lemon curd or lemon cheese? Whilst there is no legal definition laid down as to what its composition should be, it is generally believed by the consumer, and rightly so, to contain fresh butter and eggs, sugar and lemons.

In most cases this is undoubtedly so, but in certain instances there seems, judging from results, evidence of some deviation from the customary ingredients or probably carelessness in manufacture, which is to be regretted in view of the growing popularity of the article.

Quite recently I noticed a window display of lemon curd (made by a well-known firm). On the surface of each jar the butter or margarine, whichever had been used, had separated from the other ingredients and formed itself into an oily substance. There were also distinct, separate cracks, as it were, plainly visible and running from top to bottom of the jars. The whole appearance was quite enough to turn any discriminating customer away without making a purchase. In another instance I observed the contents of the jar were quite in keeping with the name on the label—"cheese": no cheese merchant could have wished for anything more firm and stodgy.

The colour, too, varies considerably, due no doubt to different tastes and opinions; some specimens certainly leave much room for improvement.

I have made the foregoing comments, not in any sense of criticism, but chiefly with a view to pointing out relevant defects and to bring them before the notice of manufacturers with a view to their rectification. The defects with which I have dealt can be easily overcome if the manufacturer cares to take the necessary trouble to investigate the cause and to put the making on a proper basis from the commencement, and, by so doing, I feel sure that he would be amply repaid by increased sales and complete satisfaction on the part of the customer.

To begin with, I cannot over-emphasise the necessity of making a careful examination and keeping a constant eye on the condition of the ingredients or raw materials which are to be used. If this is made a general practice and adhered to in a thorough manner, the defects will disappear, or rather will not occur at all. Butter or high-grade margarine, whichever is used, may easily become tainted or rancid in the hot weather or by long storage or by being kept in unsuitable conditions.

Eggs.—If fresh eggs are used, the fact of one egg being bad or musty would spoil the flavour of the whole batch. If liquid egg is used, much trouble is caused by leaving the eggs lying about too long after the tins have been opened and allowing it to become sour. The same thing applies in the case of dried eggs; in hot weather they become sour quickly if allowed to stand too long after soaking and before being used. All eggs, whichever kind are used, should be well whisked or beaten up before being put with the other ingredients into the boiling pan. Flour, too, may become musty by being allowed to come into contact with dampness.

Whilst on the subject of flour, care should be taken to see that, after the water has been added, the globules are well broken up and the paste smooth and free from lumps.

Acid.—As it is necessary to use acid to lift up the flavour of the lemon and to give it the required sharpness, I should recommend the use of citric acid, thereby adhering to the natural lemon product as much as possible.

Colour.—It is all-important that the colour aimed at in the finished article should be as pleasing and tempting to the eye as possible. An effort should be made to match the shade of a nicely ripened lemon and to avoid erring on the sickly yellowish-green side. Colour and flavour of the lemon should be in harmony with each other. In adding the colour, allowance should be made for the change which takes place in cooling.

Flavour.—The flavouring matter should not be put into the boiling pan, as much flavour is lost by this method. Better results are obtained by placing the flavouring into the carrying pan and pouring the batch on to it, taking care to see that the whole is well stirred before filling into the jars.

Plant Required.—A great advantage in the manufacture of lemon cheese is that the requisite plant is simple and inexpensive. Anyone starting in a small way can begin by using a self-generating steam pan heated by gas. For those that have steam, the standard type of steam jacketed jam pan is the most satisfactory (see Fig. 2).

Copper is the usual metal employed in pan construction, but an increasing practice is to have the inner case made from metals which resist acids, such as nickel, monel metal, or stainless steel. The makers of these types of pans have been experiment-

FIG. 6.—Carrying-Off Pan.
(Courtesy of Aluminium Plant and Vessel Co., Ltd.)

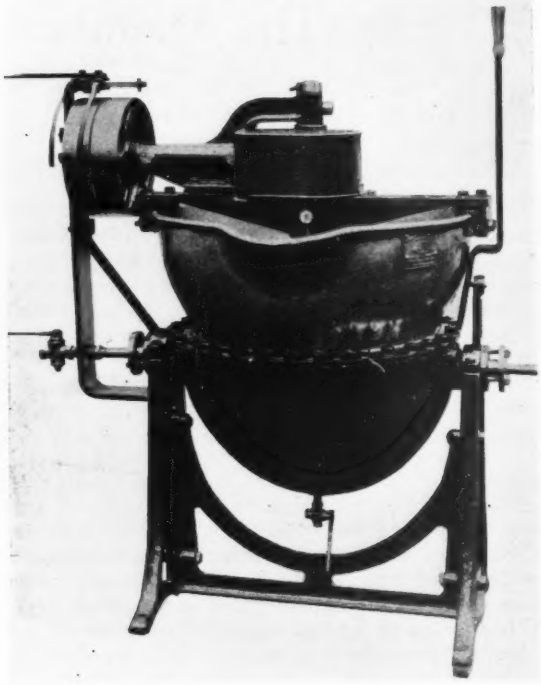

FIG. 2.—Steam-Jacketed Pan.
(Courtesy of Brierley, Collier and Hartley, Ltd.)

FIG. 1.—Self-Generating Steam Pan.
(Courtesy of Brierley, Collier and Hartley, Ltd.)

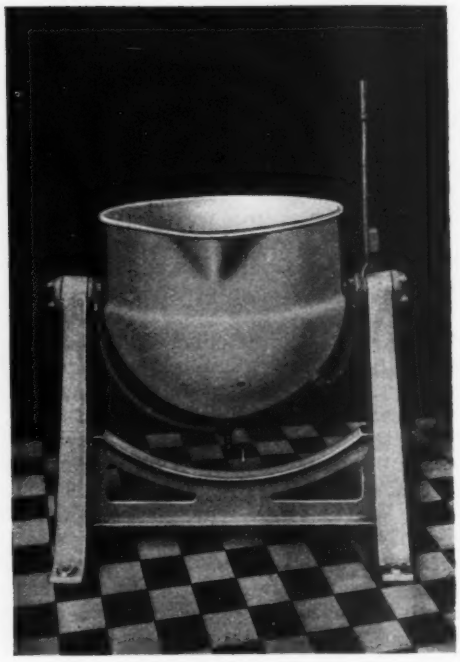

FIG. 5.—Aluminium Boiling Pan.
(Courtesy of Aluminium Plant and Vessel Co., Ltd.)

FIG. 3.—Steam-Jacketed Pan.

(Courtesy of Robert Kellie and Son, Ltd.)

ing over a period of years, and tests have been made both in laboratories and under practical conditions in factories, and the results carefully tabulated. Although more expensive than copper, these metals, being free from verdigris and other contaminating agents, have a longer life and are much easier to clean.

The self-generating type of steam pan (which is illustrated in Fig. 1) has a sealed water-jacket and is fitted with a forced draught gas burner below, and steam pressure can be obtained in about twenty minutes from starting cold. The pan is fitted with safety valve and pressure gauge, so that the operator has the heat under complete control and can reduce the pressure at any time by merely controlling the main gas tap. Although the pans mentioned are constructed for any steam pressure up to 150 lbs. to the square inch, 60 lbs. to the square inch is quite sufficient, and the pans are consequently cheaper. There is practically no loss of water unless the safety valve blows off. Water consumption is probably a gallon per week, but as a water gauge is fitted this is quite easy to check.

The steam-jacketed pans shown in Figs. 3 and 4 can be constructed of copper, nickel, monel metal, stainless steel, or enamelled cast-iron. The mixing bow and stirrers, as will be noted, are made to lift out of the pan for convenience in emptying. This machine can also be supplied with variable speeds and automatic elevating and lowering motion to the stirring gear. An alternative type of machine, made by Robert Kellie and Son, Ltd., for lemon curd boiling consists of a stationary copper pan with cast-iron steam jacket mounted on legs and having the overhead-driven mixing bow and stirrers of the non-rising type constructed of hardwood. In this case the liquid product is drawn off at the bottom through a self-grinding radial sluice valve.

Reference should also be made to Fig. 5, which illustrates a type of pan, made by the Aluminium Plant and Vessel Co., Ltd., largely used in the manu-

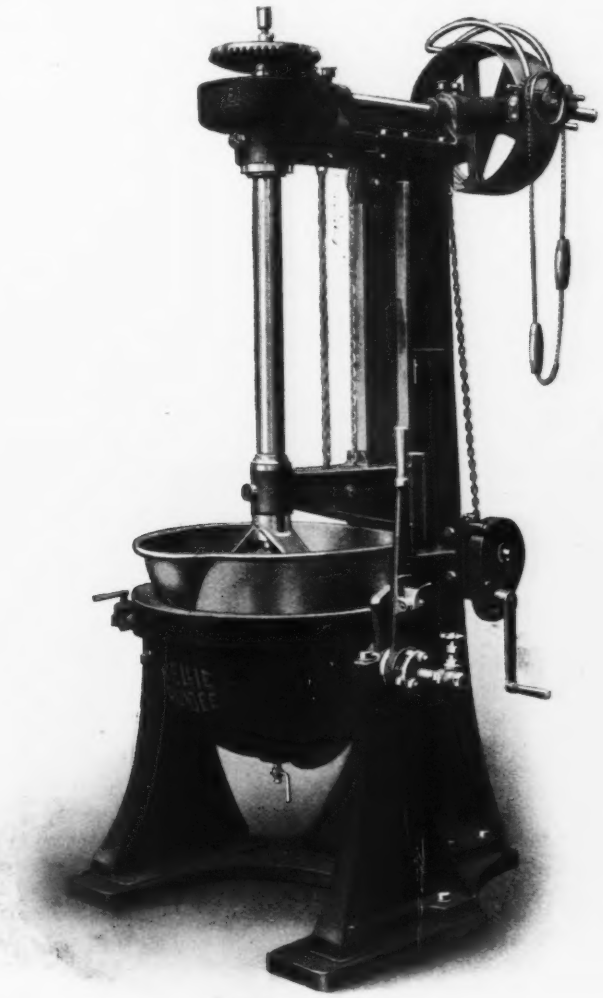

FIG. 4.—Steam-Jacketed Pan.

(Courtesy of Robert Kellie and Son, Ltd.)

(Concluded on page 152.)

The Manufacture of Piping Jellies: Their Uses in Cake Decoration

By JAMES STEWART,

Senior Lecturer and Demonstrator, National Bakery School; Joint-Author with E. B. Bennion of "Cake Manufacture and Small Goods Production."

At our suggestion the author carried out an experimental investigation into various formulæ and methods for manufacturing piping jellies. The results he obtained with the best examples are given below. It is hoped that this information will answer the numerous enquiries which have been addressed to us on this subject.

PIPING JELLIES of various colours and flavours are extensively employed in the confectionery trade for the decoration of cakes and gâteaux. They make a useful addition to the usual types of sugar icings that are customary decorative agents. When applied with discretion they not only enhance the appearance of the decorated goods but make them more appetising and consequently better selling products.

There are great differences in some of these piping jellies, not only in flavour, but in quality and smoothness. They should be bright and clear, have attractive colours and flavours, be inexpensive to manufacture, and, when used, should be perfectly smooth and retain the form in which they have been piped out. These qualities are obtained in a variety of ways, but the best results can be obtained by the use of first-class materials, boiled in the correct manner and clarified at the precise time.

Natural fruit jellies usually have the best flavour and colour, but they are sometimes "short" when used as a medium of decoration on cakes, or else flow on the goods because they are not sufficiently firm to retain the form in which they have been piped. Reinforcing fruit jellies by the addition of dried apple pectin has helped the modern manufacturer to produce better jellies without these faults. Some, in fact, are now made with dried apple pectin alone as the basis.

There are some starch jellies made with cornflour or arrowroot as the base, reinforcing them with sugar and gelatine or agar-agar solutions. These are usually perfectly smooth jellies, which have a good colour. They are not so clear as a jelly should be owing to their starchy nature, and their flavour is not all that can be desired. This is the type of jelly often manufactured in small quantities by confectioners who do not desire to stock piping jellies and who must use up the batch quickly.

Others employ leaf gelatine as the jellying agent; these are perfectly good and clear and have excellent keeping qualities. The best piping jellies, however, are made with an agar-agar solution reinforced with sugar and some fruit jelly such as apple or apricot.

Agar-agar is a powder obtained from a red seaweed found along the shores of Japan and California. It consists principally of a carbohydrate gelose, which has very similar properties to fruit pectin. It is insoluble in cold water, but swells and absorbs large quantities of it. When a solution is boiled gently for 3 to 5 minutes it goes into a colloidal solution that sets as a firm jelly when cool.

A number of formulæ and methods for manufacturing piping jellies have recently been tried by the writer, with varying success, and it is now proposed to give the results of the best samples.

Formula No. 1.

4 ozs. agar-agar. } Soaked together for 10 hours.
4 qts. water. }
20 lbs. sugar. } Boiled to 240° F.
5 pts. water. }
12 lbs. apricot puree.
4 ozs. tartaric acid.

Colour and flavour as required.

Method of Manufacture.—After soaking the agar-agar in the water for at least 10 hours, it is placed in a copper boiler and boiled for 3 minutes, then strained through a hair sieve into the sugar solution, which should have been boiled up to 240° F. The mixture is again boiled for a few minutes until the temperature reaches 220° F. The heat is then turned off and 12 lbs. finely sieved apricot puree or syrup are added to the batch. When the mixture has cooled a little, add 4 ozs. tartaric acid solution and any desired colour and flavour. The jelly is then ready for pouring into sterilised jars. Each jar should be sealed with wax paper before covering with strong greaseproof paper, which should be firmly tied down. If it is desired, a variety of coloured and flavoured jellies can be made from this mixing by pouring the jelly into the jars before adding the colour and flavour, then adding the desired colour and flavour to the jelly in the jars, stirring it well in.

Formula No. 2.

16 pts. apple juice. } Boiled to 220° F.
20 lbs. sugar. }
2 ozs. dried apple pectin. }
4 ozs. agar-agar. } Soaked for 10 hours, then boiled for 3 minutes and strained.
4 qts. water. }
4 ozs. tartaric acid.

Colours and flavours as required.

Method of Manufacture.—The apple juice is prepared by stewing about 20 lbs. of cored and chopped apples with 15 pts. water for nearly an hour, then straining off all the available juice through a jelly bag. The dried apple pectin is mixed with five times its own weight of sugar and is then sprinkled over

FIG 1.

Cake Top No. 1.—This was coated with a pale salmon-coloured icing, on which the design was outlined with piping sugar after it had set firm. The various sections were then filled in with different coloured jellies. The outside ring was a deep orange colour, as also were the inner moon-shaped portion and the figure above the butterfly. The broad "horseshoe" portion was filled with a lemon-coloured jelly, the butterfly body with green, its head with deep carmine, and the wings with banded green and lemon. This blend of colours gave a very attractive result.

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the apple juice in the boiler whilst stirring. The juice with the added pectin is heated until boiling, then the heated sugar is mixed in and both are boiled up to 220° F. The agar-agar solution, after boiling for 3 to 5 minutes and straining, is added to the jelly, and both are allowed to boil together again for a few minutes. After cooling a little the tartaric acid solution is added and the desired colours and flavours. It is then ready for pouring into jars and covering as the previous jelly.

Formula No. 3.

4 qts. apple juice.
4 qts. water.
4 ozs. dried apple pectin.
24 lbs. sugar.
3 ozs. tartaric acid.

Colours and flavours as required.

Method of Manufacture.—The previously prepared apple juice and water are placed in the boiling pan. The dried apple pectin is mixed with five times its weight of sugar and is sprinkled on to the liquids while stirring. The mixture is then brought to the boil and the balance of the heated sugar is added, and the whole is heated to 222° F. It is then allowed to cool a little before adding the tartaric acid solution and any desired colours and flavours. It is then ready for pouring into prepared sterilised jars, to be stored until required for use.

It is quite possible to make a good piping jelly at a lower cost by cutting out the apple juice and using only the dried apple pectin as the jellying agent.

Formula No. 4.

8 qts. water.
24 lbs. sugar.
6 ozs. apple pectin.
4 ozs. tartaric acid solution.

Colours and flavours as required.

Method of Manufacture.—The water is placed in a boiler. The dried apple pectin is mixed with five times its weight of castor sugar, this sugar being deducted from the total weight of sugar to be used in the batch. The mixture of pectin and sugar is sifted on to the water while stirring it in the boiler. The batch is then heated up, and when nearly boiling the remainder of the sugar is added, and cooking is continued until the temperature of the batch is 222° F. The acid solution is then added, after cooling a little,

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Cake Top No. 2.—This was coated with a deeper shade of salmon pink icing and the design was outlined with piping sugar. Violet and raspberry were used for the outer ring; the same colours were also used for the flower, whilst the stalk and leaves were filled in with greengage jelly. The small curves were filled in with carmine, orange, and lilac-coloured jellies.

The use of templates would, of course, facilitate this type of decoration.

FIG. 2.

and any desired colour and flavour, and it is then ready for pouring into the prepared jars.

It is a very simple matter to make a good firm jelly when one has a reliable brand of dried pectin in stock and knows how to use it. The pectin used in making these jellies was powdered apple pectin sold as nutrl-jel. It is a very useful product for the making of all types of fruit jellies where the natural pectin of the fruit is deficient in quantity and quality.

The tartaric acid is used as a solution and is made by dissolving 1 part of pure acid in 2½ parts of water. The solution should always be added to the batch just before pouring.

Piping jellies should be stored in glass or earthenware jars in a cool place. The colour will be retained for a longer period if stored in earthenware jars.

All of these formulæ have been tested and used as piping jellies. They make very clear, firm jellies of good colour and flavour when good colours and suitable flavours are used. No. 1 and No. 2 jellies were just a shade smoother than either No. 3 or No. 4. They all retain the form in which they are piped out. It is quite easy to alter the consistency of any of these jellies by simply using a little more or less of the agar-agar solution in No. 1 and No. 2 jellies and a little more or less dried apple pectin and tartaric acid in No. 3 and No. 4 jellies, but the quantities stated should usually be found sufficient.

A test has been made of storing these jellies under varying conditions to find out how it affected their keeping qualities. Some of each was stored in a cool chamber at 40° F., another lot was stored in a dark chamber about 60° F., while another batch was kept in glass jars and exposed to the light and normal varying temperatures. The jellies stored in the cool chamber at 40° F. kept in better condition and piped firmer than those kept at the higher temperatures. The effect of the light and heat on the jellies exposed to the light and normal temperatures made them deteriorate in colour, but did not affect their piping qualities.

Illustrations of Use of Piping Jellies.

The two reproductions of cake tops illustrate to what purposes the piping jellies can be used in confectionery.

These futuristic designs, drawn by a confectionery student in our art department, were executed on cake tops which were first covered with fondant icing sugar. The designs were outlined with piping sugar and filled in with the appropriate coloured jellies to make very attractive cakes, which also had the additional charm of novelty. This is the sort of thing progressive confectioners need to enhance their window displays and to make their goods more attractive. These jellies can also be utilised for covering fruit flans and making fresh fruit tarts and jelly tartlets, besides many other little uses as decorative agents in general confectionery.

The Vanilla Situation

THE comparison between the Mexican and Bourbon vanilla markets is striking, and shows, more than anything else, that, after all, prices are merely the expression of the relation between demand and supply.

Prime Mexicans were recently quoted at $3·50 to $4·50 per pound, f.o.b. New York, according to lengths. Mexicans were last year characterised by a normal crop, a fairly good demand, and prices firming up gradually. According to the latest advices, however, the next crop is expected to be larger by one-half than the previous one, and it is not unlikely in this event that the market will decline appreciably. Bourbon primes are offered now at 60 to 70 francs per kilo, f.o.b. Marseilles, according to lengths and origin; Bourbon assorted grades at 40 to 50 francs per kilo, and the tails or lower grades at 20 to 30 francs per kilo.

The present position of the Bourbon vanilla market is worth attention, as not for several years has it been as bad as it is now. For months past sellers were telling their clients that the bottom of the drop had been reached and that prices could not possibly fall any lower, because, they argued, they were not profitable to growers, curers, and sellers. Notwithstanding this reasoning, the market has been declining steadily, and is still doing so, and there appears no worthy reason why it should not drop still further.

There is no lower limit to the price of a commodity, even though it may be selling below the cost of production. It is all a question of balance between supply and demand. It has been obvious for a while that this equilibrium had been upset in favour of over-production, encouraged by attractive post-war prices, consumption remaining practically unchanged.

The present conditions do, of course, tend to restore this equilibrium and to raise prices to a level representing a normal profit as well as the component of the opposing factors of supply and demand. It is likely, however, that this condition will not be reached gradually, but rather by alternative and transient "ups" and "downs" due to capricious and sometimes blind speculation, and also unforeseen circumstances, such as a cyclone, the loss of a vessel carrying a large tonnage, which occur quite frequently in the producing centres, will superimpose their effects to the previous factors. Furthermore, owing to the fact that existing vines will keep on producing for several more years, and that the present stocks, which will be shortly swelled by the new crop arrivals, will last for some time before disappearing into consumption, it is most likely that adjustment will be reached only in some months, possibly in some years, just as it took several years to bring about the present state of conditions. In other words, instead of a quick reaction, a lag between the time the effects of the adjusting factors are felt and that when they effectively come into play is more likely to occur. This, even if, as some have suggested, the 1931-1932 crop was unharvested by mutual agreement of the growers or as a result of a Government decree. LYNX.

MARSEILLES,
January, 1931.

The Bacteriology of Common Salt

By WILLIAM CLAYTON, D.Sc., F.I.C.,
Chief Chemist and Bacteriologist to Messrs. Crosse and Blackwell, Ltd., London.

A series of articles reviewing present knowledge in relation to the bacteriological action of salt.

PART I.—GENERAL INTRODUCTION

COMMON SALT is ordinarily considered as a desirable preservative in numerous foodstuffs, owing to its presence inhibiting the development of bacteria. The textbooks on bacteriology consistently overlook the question of the bacteriological action of salt and fail to point out certain comparatively recent investigations which must modify current views.

All micro-organisms do not respond in the same way to the presence of sodium chloride in culture media or in commercial foodstuffs. Depending on the amount of salt present, certain micro-organisms suffer depressed growth, but others can become more active. Indeed, in saturated salt media certain strains can thrive vigorously, and, in fact, there are micro-organisms which *demand* high salt environment if they are to develop at all. This is being more and more recognised in leather bacteriology, where the subject of "salt stains" on hides is receiving increasing attention.*

The Salt Tolerance of Micro-Organisms.

According to Sperlich,† about one-half of the bacteria normally prevalent in the air and soil that form colonies on the ordinary nutrient media at usual temperatures under normal conditions, will also grow on media which contain 3 per cent. salt. A further separation, dropping to about 25 per cent., is obtainable in the case of the soil anaerobes, which are particularly susceptible to salt.

Yasuda‡ studied the amylolytic power of micro-organisms on starch in relation to the influence of salt, and found that the depression of amylolytic power was a linear function of the concentration of salt.

Tap water contains bacterial strains, such as *Micrococcus flavus* L. and N., *Sarcina rosacea* Migula, and *Bact. constrictum* Sperlich, which show improved bacterial growth when 0·5 per cent. salt is present in the culture media, and only when there is 6 to 10 per cent. salt present is their growth inhibited.

Salt concentration maxima are seen—*e.g.*, about 3 per cent. for *Sarcina rosacea* and 6 per cent. for *Bact. constrictum*. Moulds, in particular, show such concentration maxima effects, Macy's recent work§ demonstrating that *Mucor*, *Rhizopus*, and *Oospora* strains in butter are inhibited by 5 per cent. salt, whereas other moulds could thrive even when 15 to 20 per cent. salt was present. This will be discussed in detail subsequently.

Finally, there are obligate salt-loving bacteria, grouped as *Halophilic* strains, such as isolated by Golikowa* from the mud of the Liman estuary at Odessa. Baranik-Pikowsky† described halophilic bacteria isolated from the water of the Liman (density 25° to 26° Bé) which effected proteolysis with development of ammonia and sulphuretted hydrogen.

Halophilic Bacteria.

Besides the usual white salt of British manufacture (vacuum, dairy, fishery, etc.), there are marketed, particularly abroad, crushed mined salts and marine or solar salts. The British salt is free from halophilic strains; mined salts may contain soil organisms, and solar salts invariably contain one or more halophilic strains which are capable of developing in salted fish (dried cod, anchovies) or on salted hides. These organisms, frequently chromogenic in character, have their origin in sea-water. Solar salt is prepared by evaporation of sea-water in lagoons or baths under the influence of the sun's heat. Since sea-water contains organic matter, the bacteria can develop, and as the salt concentration gradually increases, a sorting-out of bacteria occurs‖ leaving eventually salt-tolerant strains, which may be seen occasionally as small red colonies on the crystals of solar salts.

The isolation, routine examination, and characteristics of these organisms will be the subject of a subsequent article.

Other Problems of Salt Bacteriology.

Salt is concerned in certain technique of bacteria-differentiation due to the development of involution forms.§ Again, certain gram-positive cocci may be separated from gram-negative bacilli by using salt agars.‖ Such differentiation of micro-organisms finds very practical application in the industrial fermentation of olives and pickles, as well as in the brine curing of hams and meat. Finally, there is the influence of salt on the *p*H reaction of foods and the consequent necessity for the consideration of salt in foods upon sterilising times and temperatures—*e.g.*, in tomato ketchup.

* Stather, *Collegium* (1928), 567-99; *Cuir tech.* **18**, 110, 134, 155 (1929); Miss Lloyd, *Leather World*, **21**, 621, 698 (1929).
† *Centr. Bakt. Parasitenk II.*, Abt., **34**, 406-30 (1912).
‡ *J. Biochem.* (*Japan*), **10**, 259 (1929).
§ Minn. Agr. Expt. Sta., *Tech. Bull.*, **64**, 3-86 (1929).
* *Centr. Bakt. Parasitenk II.*, Abt., **80**, 35-41 (1930).
† *Ibid., II.*, Abt., **70**, 373-83 (1927).
‡ Korínek, *Biochem. Z.*, **192**, 230-7 (1928).
§ Smirnoff, *Centr. Bakt. Parasitenk II.*, Abt., **70**, 29-36 (1927).
‖ Hill and White, *Jour. Bact.*, **18**, 43-57 (1929).

(To be Continued.)

The Preparation of Gravy Powder and Gravy Salt

Some practical hints on an interesting subject.

I.—Gravy Powder

IN RESPONSE to numerous enquiries for recipes and processes for the manufacture of gravy salts and powders, we publish herewith some typical examples. As was stated in reply to a previous enquiry in the November, 1930, issue, gravy powders consist usually of two or three essential ingredients, the actual proportions being varied by different manufacturers to suit their requirements. The colouring matter is generally burnt sugar caramel, occasionally backed up by a synthetic, such as coffee brown. The thickening agent is invariably a cereal powder, such as corn or sago flour. The salt is the ordinary table variety, but it has been found an improvement to use a salt rendered comparatively non-hygroscopic by the addition of about 4 per cent. of phosphates, such as "Cerebos" or "Saxa," as this prevents the objectionable caking of the preparation.

The process for gravy powder is as follows: Take 60 lbs. of cornflour (this is cleaner to work than wheat flour), sieve, and mix with 10 lbs. of dry salt. If desired a mixture of two-thirds cornflour and one-third sago flour may be employed instead of all cornflour; this improves the texture of the finished product. The mixing should be carried out thoroughly in the dry state, either in a machine, such as a dough-mixer, or by hand.

Caramelise 7 lbs. of cane sugar (preferably granulated, as this gives the charr colour) until the desired stage of caramelisation is reached. This is indicated by the emission of the characteristic caramel smell, but the operation is one which should be carefully standardised and controlled so that the same result is obtained to a substantial degree at each operation, both as regards flavour and colour. Both these properties may be greatly affected by variations in the degree of heating and method of manufacture. Owing to the skill required in the preparation of a good burnt sugar, most gravy salt makers purchase one of the caramels of high colour content offered on the market.

Some manufacturers prefer to make the caramel from glucose instead of ordinary cane sugar, claiming that this gives an improved flavour—a claim which appears to have some foundation.

In another pan bring 35 lbs. of water to the boil, turn out the gas, and add the burnt sugar, stirring until dissolved, and finally filter through a bag. The result will be a fine, clean brown colour, which, incidentally, is equally suited for use in vinegar, or cordials, etc. A little synthetic coffee brown may be added if desired.

To the 70 lbs. of cornflour and salt mixture, still in the pan of the dough-mixer, the colouring matter is now added and well mixed in, when the whole mass takes on a uniform medium brown colour and assumes a crumb-like consistency. The next stage is the drying of the product, and this is best carried out gradually by spreading the gravy powder on enamelled or other non-porous shelves in a fairly warm atmosphere. By this means the old method of allowing the paste to dry for two or three weeks on a slab is avoided and the colour of the product is kept uniform.

The powder should be packed while still warm, preferably in a moisture-proof liner, such as waxed paper.

One form of gravy powder on the market merely consists of coloured starch without any salt at all, while other manufacturers are believed to flavour the mixture with herbs or herb extracts. Celery seed has been mentioned in this connection, and we believe that the use of mono-sodium glutamate has been suggested for giving a "meaty" flavour. The possibilities of this last-mentioned salt appear to be worth investigation.

II.—Gravy Salt

A gravy *salt*, as distinct from a gravy powder, may be made on similar lines, except that the thickening agent is omitted. Suitable proportions are 28 lbs. of salt and 4 lbs. of caramel solution made as before. Put 14 lbs. of the salt in the mixer with the caramel, and add the remainder of the salt gradually while mixing. The mixture may then either be dried on trays as before for packaging as powder, or put into a pug mill or tablet machine if this form is required.

ACCORDING to the Dominion Bureau of Statistics at Ottawa, Canadian wheat shipments in January totalled 9,608,852 bushels, compared with 4,994,054 bushels during the corresponding month of 1930. During the first six months of the crop year ended January 31 the total wheat exports were 138,297,729 bushels, compared with 81,687,670 bushels for the same period a year ago, an increase of 56,610,059 bushels.

THE Italian Ministry of Agriculture and Forests is to conduct a prize contest among farmers in Southern Italy who have, or will have, planted commercial almond orchards during the period from January, 1931, to March, 1932. Improvement of existing orchards and development of better varieties for export is to be considered also.

AMERICAN fresh oysters are now sold in Stockholm, according to information received from Stockholm. Two of the largest grocery concerns retail American oysters at about 6s. 3d. per dozen, and it is stated that about 500 dozens were sold in the first two weeks following their introduction in this market. Within twenty-four hours after they are caught the oysters are shipped by fast steamer direct to Sweden, special arrangements being made in the cold storage rooms to keep them in full vitality during the transport. As soon as they are unloaded in Goteborg they are transported to basins in the outskirts of the Archipelago and then are transported to Stockholm. These American oysters are almost twice as large as the Danish oysters, which hitherto have enjoyed great popularity in Sweden.

According to paragraph 60 of the newly revised Swedish Customs Tariff, there is an import duty on oysters of 100 kronor per 100 kilogrammes (about 6½d. per pound)

Industrial Psychology

The following abstract is from an article by Dr. H. M. Vernon, "The Effects of a Bonus on the Output of Men Engaged in Heavy Work." ("Jour. Nat. Inst. of Ind. Psych.," Vol. IV., No. 5, 267-270.) An initial striking increase in output was followed by a sharp decline with evidence of intense fatigue. The firm, becoming seriously alarmed, asked the advice of Dr. Vernon, who is an Investigator to the Industrial Fatigue Research Board.

THE GROUP of men investigated were engaged in "blend pulling" at a tea packing factory. In the warehouse thousands of cases were stacked in small blocks, and the work was to collect cases from variously assigned blocks and take them on hand trolleys to the foot of escalators whence they were transported to the mixing department. The average weight of the cases, which were stacked three high, was 130 lbs. The dislodging of the cases was done by each man working alone and without tackle. The working day was 8½ hours a day and 4 hours on Saturday.

There were usually seven men engaged in blend pulling, and in the statistical period November 1, 1926 to March 4, 1927, when they were working on a simple day rate, they each pulled, on an average, 156 cases a day (Saturdays excluded).

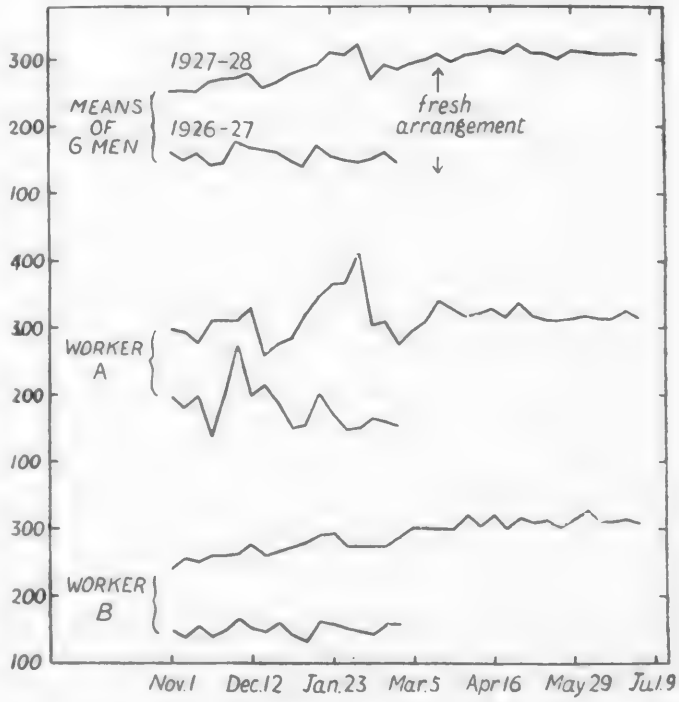
In the autumn of 1927 the men were made the subject of a time study and given a substantial bonus on all cases pulled over a fixed minimum. In consequence the speed of pulling continued to increase at a fairly steady rate from November, 1927 to January, 1928. In the week beginning February 6 the maximum figure of 323 cases was reached, but the next week the pulling fell to 270—the men were over-fatigued. All said they were too tired to take part in games on Saturday afternoons, and two of the seven men were obviously suffering from over-fatigue.

The Erratic Worker.

The best worker of the lot, A, was always erratic, both when on a simple day rate and when on a bonus rate, and in the week beginning February 6, 1928, he managed to achieve the extraordinary number of 416 cases per day. This exhausted him so much that this number fell in the next few weeks to between 278 and 308. Another man fell suddenly from 331 to 225 cases, and another from 342 to 265. The firm asked the advice of Dr. Vernon, who was able to assure them that blend pulling was not the most strenuous of work, and there was no inherent reason why the pullers should injure their health by over-exertion. They simply had not adjusted their efforts to their working capacity. Most of the skilled men in the heavy trades mentioned are paid at a straight piece rate and so have an ever stronger incentive than the blend pullers to achieve a maximum output. Yet they manage, by long experience, to avoid over-fatigue.

Reduction of Fatigue.

The blend-pullers were warned by the management not to exert themselves beyond a certain limit. This limit was fixed fairly high, as it was *found possible to lighten the work considerably by rearrangement* of the stacks. Between March and July, 1928, the men averaged from 302 to 320 cases a day. They no longer complained of fatigue or showed any signs of it. It will be seen from the figure that the rate of pulling was nearly constant, the erratic A likewise maintaining a fairly steady output, though not so steady as the others. The rate of the steadiest man, B (both in 1926-1927 and 1927-1928), is indicated by the lowest pair of curves in the figure. It will be seen that he differed from the other men in showing little sign of fatigue in February, 1928, but improved his output at a steady rate from November, 1927 onwards.



Canadian Fish Research

The following notes summarise the research carried out in 1929 at the Halifax and Prince Rupert Stations (see Editor's Notes of last month's issue). These are the two Canadian experimental stations for the fishery industry, one being the Atlantic Station and the other the Pacific Station. Having given readers a glimpse of what is being done in other countries to promote the fishery industry and to put it on a rational and modern footing, we now await the first signs of an awakening at home. Readers are invited to come forward with practical suggestions.

Part I.—The Halifax Station

THE SCOPE of the Canadian work may be illustrated by a brief survey of the ground covered in 1929 by the Halifax and Prince Rupert Stations.

At the former, the main investigations were directed at refrigeration problems. These included the conductivity of fish muscle, frozen and unfrozen; the effect of storage temperature on frozen fish; the drip from frozen fish; development of an improved type of tank for holding fish previous to processing; reduction of surface evaporation from fish by modification of the cold storage room.

Smoking.—The investigation of the fundamental constitution of wood smoke was continued, with particular reference to the formaldehyde content.

As a means of speeding up the smoking process for fish, electrical precipitation was attempted, with promising results. The desired colour could be obtained in as short a time as fifteen minutes, using this method.

With a view to making the smoking of fish independent of the weather, laboratory experiments were carried out with conditioned air for the preliminary drying operation. In order to obviate the deposition of tar and subsequent clogging of ducts and fans, smoke was de-tarred by electrical means and found to be satisfactory in producing colour and flavour in the fish exposed to it.

Salting and Drying.—The fundamental investigations of the relation between water, salt, and protein were continued.

Practical tests were carried out on the salting of fish with seven different commercial salts. The product was tested with regard to colour and keeping qualities. An unexpected development was that in most of these salts an 85 per cent. saturated solution was not sufficient to prevent the growth of bacteria and moulds. The flora of the various brines was investigated, and the experiment is being repeated with 100 per cent. saturated brine.

The routine analysis of commercial fishery salts was continued.

Canning.—The canning of scallops was investigated with a view to preventing the troublesome disintegration of the muscle. Mr. Hess made use of facilities at the Atlantic Biological Station, St. Andrews, N.B., to carry out this work. He was unable to find a satisfactory solution of the problem, and recommended that refrigeration was a more suitable means of handling this product. Experiments were carried out in an attempt to explain the presence of small crystals in lobster cans and also a slimy condition frequently observed.

Cod Liver Oils.—The effect of freezing of fish livers on the production of oil was further investigated. It was found that livers could be frozen, ground up, and pressed after thawing, but without cooking, and that they would yield a higher amount of No. 1 oil than could be obtained by cooking. It was subsequently found that a very similar process was patented in the United States. The relative merits of centrifuges and presses for removing oil from liver chum were also investigated.

Reference should be made at this point to the exhaustive researches of Professors Drummond and Hilditch into the vitamin content of cod liver oils and its variations according to locality, and also the manufacture, testing, uses, etc., of these oils. This work has demonstrated the unrivalled medicinal value of the Scottish and Newfoundland products. For full particulars the Empire Marketing Board publication 35, August, 1930, should be consulted. Acknowledgment is made to assistance received from the British and Newfoundland fishery officials.

Fish Meal.—Routine analyses of samples of fish meal provided by the trade were carried out. Certain lobster meals proved difficult in that some 15 per cent. of the material could not be accounted for. Determinations of total carbon and total nitrogen have been made in a number of ways with a view to finding the error. A considerable portion remains unaccounted for.

Part II.—Work at Prince Rupert

Fish Oils for Paints.—As regards the Prince Rupert Station, the following summarises the work carried out there in 1929. Experiments upon the bodying of pilchard oil with various catalysts have been described. The paints thus produced were subjected to standard weathering tests. These tests indicate that while the water-resisting properties, the flexibility, and drying times are satisfactory, the film is somewhat softer than that which is produced by linseed oil. An examination as to the cause of this has made necessary further experiments upon the effect of various catalysts and an examination of the constitution of pilchard oil itself, embracing the unsaturated fatty acids and the polymerisation of the unsaturated esters.

Glues.—Various methods for the production of glues from the waste liquors of fish meal plants have been examined. From these have been selected methods which will give a satisfactory glue from the point of view of strength tests and at the same time most nearly approach existing methods of fish meal manufacture. Large samples have been prepared in

an industrial fish meal plant. These samples are being examined to determine the limits of impurities which can be tolerated, and the data will be used to determine the extent of factory modification necessary for the production of fish glues. The study includes: (1) The effect of the salt content upon the physical properties of fish glues; (2) the preparation of fish glues in commercial meal factories.

Salmon Spoilage.—With a view to improving the quality of salmon as they are landed at canneries, bacteriological investigation of salmon spoilage has been undertaken. This investigation includes a study of various methods of storage in fishing vessels. A preliminary study of the bacterial flora of salmon before its contamination in fishing vessels has been made and reported.

Discoloration of Halibut.—Following the work of Harrison and Sadler, who traced the discoloration of halibut in the holds of fishing vessels to a specific bacteria, experiments were conducted with appropriate germicides which would kill the causative organism, but without injuring the quality of the fish.

In this connection there are two factors of equal importance in disinfection to be considered: (1) That of the water for ice making; (2) the holds of the vessels. Two efficient germicides were considered—viz., chlorine and its compounds, and formaldehyde. The former was eliminated from serious consideration owing to the cost of installation for water sterilisation, possible harmful effect upon fish, and damage to vessel and gear.

Formaldehyde combines germicidal and preservative properties. It has proved effective in the sterilisation of ice and in killing large numbers of micro-organisms in the presence of considerable quantities of fish slime (28 per cent. organic matter). The concentrations required for this are of economic significance, 0·005 per cent. being required for the former and 2 per cent. for the latter.

Meat Packing in U.S.A.

MEAT production during 1929 was approximately the same as in 1928, and the wholesale prices of most meat products are now about at the levels which prevailed a year ago, according to Wm. Whitfield Woods, of Chicago, President of the Institute of American Meat Packers, in a review of the meat trade issued by the institute.

"Figures issued by the United States Department of Agriculture of the number of animals dressed under Federal inspection indicate that there have been slight decreases, as compared with last year, in the case of cattle, hogs, and calves, but a substantial increase in the number of lambs dressed," the President of the Packers' Institute stated, adding that more lambs were dressed during 1929 than during any year since 1914.

Consumption of meat products, especially pork, has been fairly good during recent months, Mr. Woods said.

Exports of meat and meat products during 1929 were larger than during 1928, Mr. Woods stated. During the first ten months of the year, one billion one hundred million pounds of meat product, worth approximately one hundred and sixty-three million dollars, were exported, he said, adding that this represented an increase of about 10 per cent. as compared with the same period of the previous year.

In discussing live stock prices, Mr. Wood mentioned the fact that packers pay out daily approximately seven million dollars for meat animals, and said:

"Hog prices advanced sharply during the last half of December, and although there was a fairly brisk demand for pork products, with some advances in prices, packers suffered rather heavy cutting losses—that is, the aggregate current value of the products was less than the costs of live hogs plus operating expenses.

"Hog prices now are substantially higher than they were at the close of 1928.

"Prices of good beef cattle are about the same as they were at this time last year. Lamb prices are somewhat lower."

"Stocks of meat in storage on December 1, the latest date for which complete figures are available, approximated six hundred and sixty million pounds, and were about 9 per cent. heavier than on December 1, 1928," Mr. Woods stated.

Spray-Drying

NYROP gives some interesting examples of products obtained from a spray dryer having the Niro atomiser. Several products containing vitamin have been dried in carbon dioxide. Fresh coconut kernels can be atomised and dried to a powder which can be transported without decomposition of the fat. By drying beets, a fodder equal to barley has been obtained. Almost all foods can be obtained by spray drying in the form of dry powders which will keep, but the auto-oxidation induced by a small percentage of moisture is capable of spoiling the products later on.

THE Society of German Sugar Industries has initiated an advertising campaign for the increased use of sugar in the chocolate, jam, confectionery, and other industries.

Some Fruit Recipes

By CHRISTINE MACLEAN

Delicious Nut Dishes

NUTS ARE not only very nourishing but readily adapt themselves to many different kinds of dishes.

The nuts should be fresh and free from all insects. If they have a brown under-skin they should be blanched by bringing them to the boil in a saucepan, then placing them under cold, running water. The skins will then come off quite readily by rubbing the nuts between the hands.

Nut Cake.

Beat to a cream in a warm bowl 4 ozs. butter with 8 ozs. sugar, then slowly stir in the well-beaten yolks of three eggs. Mix in another bowl 12 ozs. flour, 1 teaspoonful baking-powder, and a generous pinch salt. Slowly add this to the butter mixture with 1 breakfastcupful milk. Mix well, then add 2 cupfuls chopped nuts, together with the whites of the eggs, well beaten. Pour into a cake-dish and bake in a rather hot oven for ¾ hour.

Nut Loaves.

Mix together in a large bowl 3 cupfuls self-raising flour, 1 cupful sugar, and a generous pinch salt, then add 1 cupful chopped nuts, which have been previously soaked in 1 cupful milk for 2 hours, together with 1 well-beaten egg. Grease a number of small tins, two-thirds fill each with this mixture, and bake in a hot oven for ¾ hour. These tiny loaves are excellent for afternoon tea.

Nut Biscuits.

Rub 1 oz. butter into 4 ozs. flour, which has been sifted, with a generous pinch each salt and baking-powder. Pass 1 breakfastcupful nuts through a mincer and add to the mixture with sufficient milk to make a smooth paste. Roll out thinly, and cut into rounds, squares, or oblongs. Brush over with milk, place well apart on greased tins, and bake in a hot oven till brown and crisp.

Apple Variation

Apple Mould.

Peel, core, and slice 1½ lbs. cooking apples, and place in a stewpan with 1 oz. butter and 2 tablespoonfuls sugar. Cook till tender. Chop 1 oz. preserving ginger into very small pieces, add this to the apples and mix well. Dissolve half packet lemon jelly in hot water and stir into the apple mixture. Cut several sponge cakes in halves, line a butter basin with half of them, pour in the apples, and place the remainder of the sponge cakes on top. Leave until it sets, then turn into a dish suitable for sending to table, and serve cold with cream or milk.

Apple Ginger.

To every 4 lbs. of apples allow 3 lbs. best brown sugar and 1 oz. whole ginger. The ginger should be beaten until it becomes soft and stringy. Put a layer of the apples in an earthenware pan, sprinkle with ginger, and cover with a thick layer of sugar. Repeat the layers until all the ingredients are used up. Allow to remain in the pan for 2 days, then pour into a preserving pan with a very little water and boil for ½ hour, stirring constantly. Remove the ginger, pour into jars, and when cold seal.

Apple Chutney.

Peel and core 4 lbs. small, good cooking apples, cut each into 4 pieces and place in a large pan. Add 1 lb. brown sugar and 3 pints brown vinegar, bring to the boil and stew gently until the apples are quite tender. Turn into a basin and add 1½ lbs. sultana raisins (whole or chopped), 4 ozs. salt, ½ oz. each mustard seed and grated ginger, ½ oz. garlic (chopped to a pulp), and ¼ oz. cayenne. Stir the mixture every day for a week, then bottle and cover securely.

Simple Apple Tart.

Mix 2 cupfuls flour with 2 dessertspoonfuls sugar, 1 teaspoonful baking-powder, and 1 pinch salt. Stir in 1 well-beaten egg and add sufficient milk to bring the mixture to a smooth paste. Roll flat, cut into two pieces, and cover a greased ashet with one of them. Peel, core, and cut into small pieces 1 lb. cooking apples, pour into the ashet, sprinkle with sugar, then cover with the other half of the paste. Pierce a small hole in the centre, and bake in a hot oven for ¾ hour.

Dairy Corrosion

THE results of a comprehensive research into the corrosive effect of milk and its products on the various metals used in dairy equipment were recorded by Hunziker, Cordes, and Nissen in the March issue of the *Journal of Dairy Science*. It was found that the metals most resistant to corrosion were Allegheny metal, tin, and properly tinned copper. Monel metal tarnished, but had little effect on flavour. Nickel-silver tarnished badly and generally injured flavour. Nickel tarnished readily. Aluminium was sensitive to alkali washing powders, and magnesium-aluminium alloy was somewhat corroded. Iron, copper, and zinc (including galvanised iron) are unsuitable for daily use; the same applies to tinned iron unless thoroughly and heavily tinned. In general, the most corroded metals had the most adverse effect on milk products. Acidity and high temperature accelerate corrosion. In sweet milk at room temperature there is some attack on metals.

Book Reviews

The Effect of Pure Culture Inoculation on the Quality and Chemical Composition of Sauerkraut. By Carl S. Pederson. *Technical Bulletin,* No. 169, September, 1930. Pp. 29. New York State Agricultural Experiment Station.

Seventy-two krauts have been made, all except twenty-five being inoculated with pure cultures of some one of the following organisms: *Streptococcus lactis* (Lister) Löhnis, *Leuconostoc mesenterioides* (Cienkowski) Van Tiegham, *Lactobacillus buchneri* (Henneberg) Bergey, *Lactobacillus pentoaceticus* Fred, Peterson, and Davenport (synonym: *Bacillus brassicæ fermentatæ* Henneberg), *Lactobacillus delbrücki* (Leichmann) Holland, *Lactobacillus cucumeris* Bergey (synonym: *Bacillus cucumeris fermentati* Henneberg), *Lactobacillus plantarum* (Orla-Jensen) Bergey, and two cultures from LeFevre called *Lactobacillus brassicæ* Wehmer.

Normal sauerkraut was found to complete its fermentation at 70° to 75° F. in from two to three weeks. At that time it normally attains an acidity of 1·50 per cent. or more; the alcohol present is less than 0·6 per cent.; and the ratio of volatile to non-volatile acid is about 0·24.

Inoculation with pure cultures of *Streptococcus lactis* improved the quality of the kraut and did not affect the by-products produced. Inoculation with the so-called *L. brassicæ, L. cucumeris,* or *L. plantarum* was detrimental to a good fermentation. The quality of the krauts was poor, and the predominant fermentation was of the pure lactic acid type, resulting in little acetic acid, alcohol, or carbon dioxide. Such kraut was more susceptible to yeast spoilage. Krauts inoculated with pure cultures of *L. pentoaceticus* were fair in quality but had an abnormal flavour. These krauts showed an abnormally high volatile acid content.

Although a decided variation can be produced by pure culture inoculation, the use of certain strains especially has a decided detrimental effect. In order to have a beneficial effect it is apparent that the normal floral change in kraut must be duplicated.

Margarine as a Butter Substitute. Fats and Oils Studies No. 4. By Katharine Snodgrass, Research Associate, Food Research Institute, Stanford University, California. Pp. 333. 1930. Sales Agents: P. S. King and Son, Ltd., London. $3.

This is the fourth publication of the fats and oils studies issued by the Food Research Institute, which was established in 1921 for research in the production, distribution, and consumption of food. No. 1 (1928) dealt with a general review of fats and oils; No. 2 (1928) with copra and coconut oil; No. 3 (1929) with inedible animal fats in the United States, considered with special reference to sources of animal waste, the rendering industry, municipal reduction, and some effects of meat inspection.

The present work is divided into three parts: the first discusses the history of legislation to control the manufacture of margarine; the second the technological developments and dietary considerations; while the third comprises an economic analysis of consumption in Europe and America, the trend of production and consumption, the organisation and location of the industry, the markets—for both margarine and butter.

Of particular interest to manufacturers are the forty pages reviewing the technological developments in margarine manufacture. The events which led up to the invention of margarine are traced, and the latter occurred at a time of definite need in Europe for a cheap substitute for butter. After discussing the properties peculiar to butter, the Mège-Mouriez process is described; this process being named after the French chemist to whom the prize offered by Napoleon III. was awarded in 1870. The next chapter is headed "The Shift in Raw Materials" and discusses early movements, the introduction of vegetable oils, the hydrogenation of oils, experiments with new oils, and ingredients of American and European margarine. Following this is a chapter dealing with mechanical and other improvements, in which are discussed chilling by spray and brine-cooled drum, use of sour instead of sweet milk, use of egg yolk and lecithin, emulsification, addition of vitamin A, butter aroma, and likely future developments. It is foreshadowed that future technical developments will occur in the synthetic production of fats and the improvement of flavour and texture. Altogether, the book is an extremely important contribution to the all too scanty literature relating to the technology and economics of the margarine industry.

Bread. By Harry Snyder. 293 pp. Macmillan. 1930. 15s.

This book provides excellent light reading for the cereal chemist, baker, and miller, and instructive and interesting matter for the individual not directly interested in the cereal industries.

To every cereal chemist the name of Snyder is familiar. He was one of the great pioneers, one of those early workers who laid the foundations of modern cereal chemistry. His work was an example of what Shakespeare meant when he said, "He that will have a cake out of wheat must needs tarry the grinding," everything he did was marked by patience and perseverance. This book, which starts with an introduction by William Edgar, of the *North-Western Miller,* and includes a biographical sketch of 42 pages by Andrew L. Winton, an essay on Snyder as soils investigator and teacher by Frederick Alway, of the University of Minnesota, and ends with a miscellaneous collection of Snyder's own articles, is a monument to the memory of a big man and a great cereal chemist.

Snyder will be remembered as a firm defender of the cause of honest, pure white flour. Calmly and fearlessly he attacked the current fallacies concerning food values and fancy foods, and in this way did much to dispel the erroneous ideas which were being spread rapidly by food faddists and cranks.

To judge from some of the jargon which appears with clockwork regularity in our sensational Press to-day (and even occasionally creeps into such reputable journals as this!) one might say, in the phrase of the poet, "Snyder, England hath need of thee to-day!"

The collection of his writings—which appeared originally in the *North-Western Miller, The Bellman,* as well as papers contributed to learned societies, such as the American Chemical Society, the American Association of Cereal Chemistry, etc.—is very interesting and all are written with the simplicity of conviction and the faith of bearing a true message. The book is well worth reading.

T. H. F.

Commodity Market Terms. By Cuthbert Maughan. Pp. 305. 1925. London: Effingham Wilson.

This useful work is the second volume of *Trade Term Definitions,* and is described as a discussion of words and phrases used in the conduct of international trade and the methods of dealing in products. It was a particularly difficult task that the author set himself when he decided to collect and correlate the widely scattered information and to arrange it in a form readily accessible, but the task has been well executed, and the appreciation expressed by the business man must be gratifying to the author. There are times—many times, in fact—when not only business men, but also chemists and technicians in general, have done much searching and questioning in an effort to elucidate the meanings of queer-looking trade designations. Few of us have escaped these puzzles. If we had known of the existence of

Commodity Market Terms much time and annoyance would have been saved.

Naturally, in a book of this description the ground covered is wide: wheat, maize, barley, malting, brewing, oats, flour, rice, oils and fats, sugar, tea, coffee, the metals, textiles and fibres, hides, skins and furs, timber, paper, rubber, gum, shellac, feathers, wines and spirits, are some of the subjects. The book is certainly a mine of useful information.

Industrial Microbiology. By H. F. Smyth, M.D., Dr.P.H., Asst. Professor of Industrial Hygiene, University of Pennsylvania, and W. L. Obold, M.S., Asst. Professor of Biological Sciences, the Drexel Institute. Cloth 6×9. Illustrated. Pp. 313. November, 1930. London: Baillière, Tindall, and Cox. 27s.

The appearance of this work is opportune. The applications of bacteriology in industry are rapidly increasing in importance, and new applications and improved means of control are constantly being discovered. No doubt this phase of the chemical industry has suffered through the lack of any comprehensive reference work and the widely scattered nature of the published reports of the investigations which have been carried out by technical and academic workers engaged in various fields of industrial activity. Now this gap has been filled by the volume under review, which brings together information gleaned by not only scattered investigators, but by the authors themselves. This material has been selected according to its bearing on practice, and stress has been laid on the micro-organismal phase, the source of the organisms involved, methods of obtaining them and of controlling their proper functioning in factory operations. Bibliographies accompany each chapter, and these constitute in themselves a valuable contribution to the more complete use of biological processes in industry. Charts, graphs, and plates have been used to illustrate the work, and a number of important tables are also included.

We would say, definitely, that the book is indispensable to the food manufacturing chemist, and also to any chemist engaged in the manufacture of chemicals. This will be appreciated from the following indication of some of the ground covered. Thus, the book embraces acetic acid and vinegar, citric acid, gluconic acid, lactic acid, the industrial alcohols, glycerin, glue and gelatin, the cellulose and sugar industries, fats and oils, vitamin foods, milk products, acid beverages, cheese, bread, meat curing, eggs—together with special sections on commercial enzyme production and biological processes in industry. Perhaps the most valuable feature of the book is the exhaustive nature of its references to original papers, and this, taken in conjunction with the orderly arrangement of the matter, render it particularly adapted to ready access for information. The printing and binding are in conformity with the usual high standards characteristic of Messrs. Baillière, Tindall, and Cox. It will be remembered that these publishers have produced two similar works, *Enzymes*, by Waksman and Davison (1926) and *The Aspergilli*, by Thom and Church (1926) which have been previously commented on favourably in this journal.

The Fermentation of Cacao Beans

AFTER HARVESTING and storing the pods are broken and the beans extracted. It should be remembered that the white beans from the pod are soft and covered with a fruity pulp and bear no resemblance as yet to the familiar product of commerce. The first process undergone is fermentation. This is a crude and little understood operation, but it results in the fermentation of the sugary pulp covering the bean and the transformation of its colour; thus the bean changes from a snow white to a rich brown. There are other changes in the interior of the bean more subtle than the above, though no less important, which go to increase the aroma and flavour.

The process of fermentation is carried out very crudely. The wet and slippery beans are packed in thick cedar wood boxes and covered at the top with plantain or banana leaves. The temperature rises during the "sweating" to 47° C. at the end of the third day. A. W. Knapp, in the pamphlet "The Practice of Fermentation in Trinidad," lays down four conditions essential for a good fermentation:

1. The mass of beans must be kept warm.
2. The mass of beans must be moist, but not sodden.
3. In the later stages there must be sufficient air.
4. The boxes must be kept clean.

The fruity pulp covering the beans changes into a viscid liquid containing fatty and hydroxy acids together with ethyl and methyl alcohol. It is estimated that in the proportion of 1 cwt. of dry beans about 1½ gallons of "sweatings" are produced.

After fermentation the beans are dried. This can be performed in the open under the fierce tropical sun or by artificial means, such as simple stoves or revolving drums, etc. The sun is, of course, preferable, being slow and the temperature not excessive, taking at least three days.

In some districts it is the practice to mash the beans prior to drying; this, however, results in loss of weight and diminution of the odoriferous principles.

Finishing Operations.

The roasted bean is not yet ready for shipment; it must be clayed or polished, and in some cases coloured. These operations are not essential and are, in fact, deleterious. In Venezuela it is the practice to cover the beans with a coating of red clay. The object of this claying is to prevent the bean from becoming mouldy, but in many cases it does not prevent the growth of moulds. There is no doubt that the addition of clay to the bean enhances its appearance and increases its weight, which, from the planter's viewpoint, is indeed excellent.

The colouring of the beans is achieved by a small quantity of clay—1 per cent. is generally sufficient—and there is no doubt that it gives them a better appearance and hides all traces of disease and mould. In Trinidad it is the custom to polish the beans by allowing the natives to roll them with their feet; in fact, they perform a curious dance accompanied by a weird native chant.

The above practices are only confined to certain districts, notably Venezuela and the West Indies.

The beans are at this stage ready for exportation.

P. SMITH.

Correspondence

"ON ADVERTISING MANAGERS"

To the Editor.

DEAR SIR,

I could not but be interested in Griffin's article "Publicity"—"On Advertising Managers" in your March issue, as I am one of those unfortunates myself.

I say "unfortunates," not because I regret my profession—far from it, for to a man with vision, ideas, and creative ability, advertising is a most entertaining hobby, and there's nothing like making one's work a hobby—but unfortunately, notwithstanding the rapid strides which have taken place in commerce generally during the last few years, advertising is still looked upon by many concerns as at best a necessary evil and even by some as a dragon gobbling up the firm's profits.

Griffin is right; it is really astounding how many advertising managers, actual or honorary, are second or third raters, handling their firm's publicity in a slipshod manner, buying from any source and dishing out supplies without regard to individual needs or local conditions.

Why is it? Why do so many of them look in a state of continuous pecuniary want? Undoubtedly because, firstly, in many instances firms think any man can handle what they consider a simple job; and, secondly—and this is by far the more likely reason—because, being a spending department, the concern does not feel disposed to pay the man in charge on a par with, say, the sales manager. But after all, the advertising, if it is advertising at all, should go a long way towards keeping the sales manager and the sales up!

When will managing directors realise that a good advertising manager can well save his salary out of the company's appropriation? He will get a lot more out of every £1 he spends than would a poor one. Surely it is penny wise to pay a man £300 instead of £1,000 if the former is averaging 10 per cent. more in cost on a £20,000 appropriation, through lack of experience and probably interest, although he is actually buying at the keenest he can? Believe me, there are many firms doing it; if there weren't, a large number of printers and allied concerns would not be getting the amount of business they do.

Naturally, managing directors are much too busy to consider whether paper is being bought at 2s. 11½d. per 1,000 or 2s. 5d., and probably no one except the advertising manager knows sufficient about it in the firm to express an opinion one way or the other; but the writer found that by a close study of this and similar matters he saved his concern over £400 on the previous year's purchases of similar articles, though his predecessor had been in office five years!

As Griffin says, the advertising manager should know his job, be keen, alive to possibilities, and not give the other man a start in using them; but if he is truly an ADVERTISING manager he should be worth his salt, and not only earn but get a salary which will keep him keen and always out to study his employers' interests.

I am, sir,
Yours faithfully,
ADMAN.

KINGSTON-ON-THAMES,
March 9, 1931.

THE PROCESSING OF RHUBARB

To the Editor.

DEAR SIR,

I noticed in your April issue, in an article entitled "Lacquer Protection of Fruit and Vegetable Cans," by W. B. Adam, that reference was made to the canning of rhubarb and the corrosive nature of this product towards tinplate.

Although the importance of good lacquering cannot be overstressed (double lacquering is recommended), yet another point of considerable importance in the successful canning of this product is that the rhubarb, after being cut into the desired lengths for canning, should be steamed for a short period or soaked in warm water previous to filling into cans. The heat treatment is similar to that which is employed in the canning of apples.

Both products are alike in that they contain a considerable amount of oxygen in the cell tissue, which, if not eliminated, will accelerate corrosion and promote losses with the canned product.

Yours sincerely,
J. M. BRYAN.

LOW TEMPERATURE RESEARCH STATION,
CAMBRIDGE,
April 10, 1931.

COLOURING AND FLAVOURING PROBLEMS

To the Editor.

DEAR SIR,

We read with much interest the article on colouring and flavouring problems in the food industries by Mr. T. H. Fairbrother in the March issue of your journal, and find same very instructive. At the same time, there are one or two points in this article to which we should like to draw attention.

For instance, it is stated under the heading "Colours for Confectionery" that chocolates are often coloured with a composite dye made from Bismarck brown toned with a black and a green or blue. There are very few firms who would use Bismarck brown for colouring chocolates, as the toning with black, green, or blue referred to would have to be done with basic dyes to mix with Bismarck brown, and there are no basic blacks, greens, or blues which are suitable for confectionery. It is for this reason that we always deprecate the making up of mixtures by inexperienced people, as, unless one has a wide knowledge of the properties of each colour (not only the class of colour but fastness to acid, alkali, light, heat, etc.), endless trouble and loss can be so easily caused.

Then, under the heading "Fish Colours," it is stated that artificial colouring matters have also been used for colouring fish, but complete satisfaction has not been arrived at. We have a large clientele in this trade, and must maintain that, so far, we have not come across such a report from the trade. In fact, from the large and increasing number of orders which we receive regularly, we gather that our colours are giving the users every satisfaction, but if there are any members of this trade who are experiencing difficulties, our technical department is entirely at their disposal, and we feel sure we can help them.

With regard to the legal aspect, we should like to stress that up to this point the colours referred to in this article have been, in the main, soluble dyestuffs, whilst those referred to in this portion of the article are inorganic colours, and no reputable manufacturer of edible colours would think of offering such products for foodstuffs. We consider this cannot be made too clear in view of the fatalities mentioned, as, in all our experience, extending over fifty years in the trade, we have never come across a case of death due to the use of soluble harmless edible colours such as we have been supplying to the trade for so long past. At the same time, we quite agree that the restrictions at present imposed are essential, as the indiscriminate use of colours is not a thing to be encouraged.

Yours faithfully,
p.p. WILLIAMS (HOUNSLOW), LTD.,
A. G. KEMP.

March 18, 1931.

Publicity

By THE GRIFFIN

On Printed Propaganda.

BOOKLETS, brochures, folders, house organs, and catalogues all come under this heading, and they are just as important as space advertising. They are distributed with the idea of persuading the recipient to buy part or whole of the articles described in them, or at least to obtain some enquiries from the sender. In other words, they must arouse the receiver's interest. To do this, the propaganda should be exceptional, and, while not necessarily super-expensive, production costs should not be considered where they are concerned to the extent that they are with cheaper productions.

It has to be borne in mind that every day propaganda is on the increase, that manufacturers and retailers receive more and more specimens by post, and it is only those that are really above the rest which stand a chance of being glanced at. Such matter has to be really exceptional to be thoroughly perused.

In the writer's view there are certain basic points which are the foundation of all good propaganda, and he places them in the following order:

1. Design.
2. Cover.
3. Colour.
4. Paper.
5. Print.

All these points are, in fact, equally important, but they are so interlocked that a separation process is necessary in order to know where to commence. The first matter to settle is the design or the form the propaganda is to take. Booklets can be of any shape or size, square, oblong, or circular; there is no limit to the range. One must, to a great extent, be guided by the matter to be inserted, giving special regard to the question of the size of the illustrations and blocks to be carried inside, though an "out-of-the-ordinary shape" does undoubtedly attract attention. One of the most attractive pieces of literature the writer ever saw was a hexagon-shaped booklet, which absolutely asked to be opened.

The Cover Scheme.

Having fixed the shape, decide on the cover. Three matters have to be carefully considered in doing this: the paper or board to be used, and what to put on it. At this juncture must be brought in the third point, the question of the colour scheme; these three points are so closely woven that it is impossible to settle one without the other. If any reader of this article will give instructions to his staff that all propaganda received during the course of the next two or three weeks is to be kept and laid before him weekly, and if he will then make a survey, he will collect an extraordinary range of ideas. The test to apply to each one is, "Does this appeal to me?" not from the "commodity" point of view, but from the general appearance and make-up, and he will doubtless be able to discern where an addition, or deletion, or alteration would add considerably to the selling value. The golden rule to be observed in the matter of covers is to devise something that will deter the recipient from at once throwing the booklet away; and to do this there must be a "something" to arouse his interest, and the best "something" is—nothing. It is hard to understand why so many advertisers think it not only proper but essential to tell their whole story on the cover instead of allowing the cover to carry out its most vital duty: to excite the imagination as to what is to come and to whet the reader's desire to see the contents. After all, human curiosity is a great factor, and one which should be taken into consideration and played on accordingly.

A Successful Example.

One booklet used by one of the writer's clients with great success for over two years had a "mottled autumn tint" cover scheme in thickish board, with a slit cut near the top left hand in which was inserted a length of old-gold ribbon with V-shaped ends running three-quarters of the length of the cover. On the ribbon near the top was a paper seal of the firm's trade mark, with both ends gummed together at the back of the ribbon. In the bottom right-hand corner was a five-word slogan about Goodwill and Service. There was nothing else. The reason for the ribbon was not to add to the booklet's attractiveness or make it look pretty, but to prevent its being thrown away. Very few men who receive a booklet of this description would throw it away. The inside pages (four only) consisted of one sheet of a velvet-glazed surface, azure-blue paper, folded in half, and then folded across, using the "uncut" ends at the bottom of the page. The ink used was brown, to match the cover (the blue paper toning with the gold ribbon, both subdued colours). Margins of two inches at the top and one and a half inches at the sides were utilised, and two-word headings on all four pages. Some thousands of pounds of orders were received as a direct result of this booklet, but, to prove the point that a really good booklet is not thrown away, it is notable that enquiries continued to arrive for eighteen months afterwards.

There was no reprint during that time and no prospect was circularised twice. It is true that it was expensive (working out at 2s. 7½d. each, including special envelope and postage), but it shows that it pays in the long run to spend money on really good propaganda. One shot with a well-thought-out, dignified, expensive-looking booklet is worth six cheap efforts that carry no interest. Choose the type carefully and see that the printer has the actual fount you want. Many a good piece of propaganda has

been ruined by some entirely different fount of type having to be used at the last moment owing to the printer not having the chosen style. Don't use over-small type. It requires an effort to read it, and that is bad for your publicity.

Why not a House Organ?

When the matter of issuing a house organ is being considered, take your time. This is one of the things that should not be rushed. Remember that once a house organ is produced it must be carried on and done well. Nothing could be more damaging to the prestige of a company than to have to admit failure on their part to carry out one of their own publicity campaigns. There are two types of house journal—one intended for the staff of the company only, and the other which is broadcast to clients and customers. It is the latter which is under discussion here.

Never publish more than once a month, and in certain trades quarterly issues are even more suitable. In any case, remember that whoever is given the job of editing must know a good bit about journalism and newspaper work generally. An advertising manager usually has it passed over to him, and he certainly is the best man; but if there is no such individual in the company, then a special man should be selected. Do not suggest that it is a job to be done in his spare time. Failure certainly lies that way, for after a few issues time will not (or, more properly, cannot) be found. In such a case there will be a rush at the last moment, scissors and paste will be employed, and proofs rushed through (often uncorrected), the whole resulting in a feeble issue, matters steadily becoming worse, and finally the journal dies.

Another argument in favour of doing the thing properly is that it is expensive. Do not say too much about the company itself, but rather enlarge on the especial industry in general. The outlook at home and abroad, facts (and at times figures) regarding colonial trading, foreign competition, and so on, are the house organ's topics. Make it of real general interest to the trade, and if the company's name appears once only as the publisher, it will be quite sufficient advertisement. A good house organ advertises the publishing house automatically, as the recipent says, before many issues have passed: "You know, in the house organ So-and-so send us every month." There is ample room for more really first-class house organs on these lines, but the majority to-day carry a house advertisement on every other page and very little else of any real interest. If a company running a house organ were to be absolutely unorthodox and send a postcard to all on their mailing list saying that "With our issue of the 1st May there will be an eye-witness account of the Final Tie at Wembley" or such other sporting event, according to the date of issue, it would give them more real publicity and remembrance than pages about their manufactures.

The mailing list should be subject to continual revision; one cannot afford to send scores of copies to people who are dead or no longer employed in your industry. The largest section of all, those who write and ask to have a copy sent them every month, should also be subject to scrutiny. The writer knew one house organ (an extraordinarily good effort) that was sent to three junior clerks and four typists in one firm, and the heads did not know of its existence. Special attention should also be paid to the foreign mailing list. If actual costs are checked up it will probably be found that it costs anything from 5s. to 10s. per year per copy sent; therefore eliminate the dead-head.

Irradiated Chocolate

Ried ("Irradiation of Chocolate," *Wien. Klin. Woch.*, 1929, Vol. 42, pp. 896 and 1105) has found that chocolate irradiated by the usual methods exerts a favourable influence on animals. Animals which had been fed with irradiated chocolate showed a greater increase in weight than the control animals, which had been fed with ordinary chocolate, and that harmful effects of irradiated chocolate as hypervitaminosis never became manifest.

Krasso ("Irradiation of Chocolate," *Wien. Klin. Woch.*, 1929, Vol. 42, p. 809) reports favourable results with irradiated chocolate on human beings. He found an increase in appetite in patients fed with 50 grammes daily of irradiated chocolate and two cups of hot milk to which 1 to 3 teaspoonsful of powdered irradiated chocolate were added. Cases of advanced phthisis often showed an improvement in their general condition, a gain in weight and a decrease in the toxic manifestations. Good effects were noted in patients with chronic exudative pulmonary tuberculosis and in those with fibroid phthisis.

Favourable results were also obtained in other diseases, such as multiple lymphoma, enterocolitis, and secondary anæmia.

Vitamins in Fish Oils.

Nelson and Manning have investigated the distribution of vitamins in fish oils and the report was presented at the April meeting of the American Chemical Society.

Six samples of fish oils which are representative of the available commercial oils are included in these studies. Named in the descending order of the present production they are pilchard, menhadon, Alaska herring, salmon, Maine herring, and tuna. Vitamin A studies show that of these oils only salmon oil can be considered a good potential source of this vitamin. The sample tested showed this oil to be approximately equal in A potency to the poorer grades of medicinal cod-liver oil. Considering that present methods of salmon oil manufacture are not particularly conducive to vitamin A preservation, and further that the potential supply of salmon oil is five times as great as the present domestic cod-liver oil supply, these findings seem significant. Vitamin D studies on the above oils, which are now in progress, will be reported.

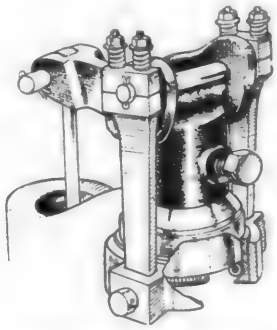
New Closures for Glass Containers

Two interesting new types of closure have recently been introduced to the market by Messrs. Sutax, Ltd., to supplement their existing range of Netur, Sutax re-seal, and beaded Phœnix types. One of these is called the "Royen" (illustrated herewith); it consists of a sealing band and a cap by which the container can be re-sealed by a simple snap action, made possible by tabs which are turned under the rim of the container together with the outer band. In effect, a double seal is thus obtained with this closure, which has been particularly designed with a view towards use on containers with a simple finish, such as the "tie-on" as used for jams.

The Royen Closure.

The Sutax Narrow Re-seal.

The Sutax re-seal for narrow mouth bottles is the second new introduction. It embodies the same advantages as to re-sealing with a half-turn as its well-known wide-mouth predecessor, but it has the advantage that the wad or liner can be placed in the cap without fear of injury from the fastening lugs. The deep inner cup adds to the appearance of the cap, in addition to increasing the firmness of the hold.



The Sutax Sealing Head.

The machines for applying these and the other Sutax caps, as produced by this firm, have already been described in the *Food Industries Manual*, as well as in our February issue, so that it is unnecessary to make detailed reference to them again, except to add that a model for sealing with an initial vacuum has recently been produced—an important point from the point of view of packers of such articles as potted meats, etc. They are available in various types, sealing from 20 to 120 containers per minute and can handle a very wide variety of closures. The sketch given herewith shows an important feature of the machine, the sealing head, which secures the closure by the powerful contraction of a coiled spring without any bottom pressure. A perfect seal is thus obtained without damage either to container or closure.

PRACTICALLY every known type of cardboard box—round, square, oval, or folding—were to be found on the stand occupied by Messrs. Robinson and Sons, Ltd., of Chesterfield, at the B.I.F. Containers for food and chemical products imprinted with various designs were a special feature.

Precious metals in their various forms prepared for industrial and research purposes, such as condensers, stills, boiling pans, cocks, etc., were the principal items exhibited by Messrs. Johnson and Mattley and Co., Ltd. Great interest is being shown at the moment in regard to the uses of this metal in the industrial field. Platinum laboratory apparatus in many forms were also on view, as well as gauges for ammonia oxidation.

IN a recent number of the *Sulzer Technical Review*, "New Problems in Connection with Boiler-feed Pumps" are illustrated with curves showing efficiencies and capacities. Articles follow on the Cold Storage of Eggs; Diesel-electric Power Stations in India, Egypt and Roumania, and Cold Stores in the Argentine, amongst other subjects.

Enquiries

Enquiries are dealt with immediately on receipt, and the desired information is communicated in full by private letter. The replies given below are merely brief abstracts or indications that the names and addresses, or whatever may have been requested, have been supplied. Any further information supplied to us relating to the questions appearing below will be passed on to the enquirers.

221. *We have an enquiry from one of our agents abroad for plant to turn out sweets and crystallised fruit (the fruit would be bought and then coated) and biscuits. Would you be good enough to let us know who would be likely to be in a position to quote us for suitable plant for this?* (London.)

Several recommendations made, especially Baker Perkins, Ltd., and Brierley, Collier, and Hartley, Ltd.

222. *We are interested in Enquiry* 193 *and shall be glad to have the names and addresses of firms making machines for shredding suet and fats.* (Glasgow.)

List of firms supplied.

223. *Re Enquiry* 195 *we shall be glad to know the best make of double-seaming machine for closing* 2 *to* 4 *tins per minute.* (Scotland.)

Advised to communicate with British Can Co., E. W. Bliss Co., Cameron Can Machinery Co., J. Feaver, Ltd., W. E. Hughes and Co., Ltd., Mather and Platt, Ltd., Premier Filterpress Co., J. Rhodes and Sons, Ltd., G. H. Williamson and Sons, Ltd.

224. *Will you kindly supply us with the name and address of anyone who in any way can supply detailed information about the manufacture of oatmeal puddings and Scotch haggis?* (Edinburgh.)

Name of an expert was furnished.

225. *We shall be obliged if you can advise us as to where we can obtain citrus pectin in powder form.* (Surrey.)

H. Mayer Senior, Ltd., and the California Fruit Growers' Exchange, Ltd., are to be recommended; also O. Murray and Co., Ltd.

226. *Can you recommend an expert to guide us on questions relating to the permitted arsenic content for various materials used in the manufacture of soups?* (London.)

The enquiry was referred to Dr. C. Ainsworth Mitchell.

227. *Required the name of the makers of a mill called the "Ideal."* (Birmingham.)

228. *We shall esteem it a favour if you could kindly put us in touch with any firms you know of who supply counting machines for tablets.* (Glasgow.)

F. E. Dickinson ("Veeder-Root"), Thompson and Capper, Ltd., Bennett, Sons and Shears, Ltd., W. and T. Avery, Ltd., S. W. Wilkinson and Sons, Ltd., and Castle Huskisson, Ltd., were suggested in this connection.

229. *We should be obliged if you could give us a suitable recipe for cold milk ice-cream powder.* (Birmingham.)

To prepare a powder which will produce a satisfactory genuine ice-cream without the application of heat is not easy, but something like the following procedure might be adopted:

Finely powdered sugar	40 ozs.
Skim milk powder (preferably "spray" process)	30 ,,
Fine quality powdered gelatine	10 ,,
Vanillin	1 ,,

The first three could be sieved to mix, then the vanillin either (1) triturated with increasing quantities of the other mixed ingredients to incorporate, or (2) dissolved in rectified spirit and sprayed on, which would be costly. Then if

Milk	3 quarts
25 per cent. cream	1 quart
Sugar	1¼ lbs.

be taken, and 8 ozs. of the above powder dissolved and dispersed with the aid of a little heat, in, say, one pint of the milk and then added to the bulk, and the whole stirred till dissolved and mixed, a nice cream results capable of standing 80 to 90 per cent. overrun of rich, creamy taste, analysing as follows:

Fat	7 to 8 per cent.
M.S.N.F.	10 ,,
Sugar	12·5 ,,
Gelatine	0·6 ,,

(Approximate figures.)

230. *With reference to the article on page* 216 *of the "Food Industries Manual," I should like to know something more about the acetone precipitation method, as also the method of adding salts to prevent "weeping."* (London.)

The acetone test is quite easily carried out with a little experience and requires only simple apparatus. The method is as follows: Take 10 c.c. (approximately 10 grams) of the juice containing pectin in a small beaker. Add 50 c.c. of rectified acetone or 95 per cent. alcohol (acetone is preferable on account of its lower boiling-point, which makes the test more rapid). Mix thoroughly by stirring with a glass rod. The pectin is thrown down as a precipitate, which, if firm and easily collected on the glass rod, indicates that the juice is suitable for making jellies. If it is soft and easily broken, the juice is of inferior quality and will either form a soft jelly or will not set at all.

The precipitate is strained off from the liquid by pouring through a small tared sieve (about 2¼ inch diameter and ½ inch deep) of silver or silvered copper wire of 80 to 100 mesh, and is washed and kneaded with acetone by means of the glass rod on the sieve. It may then be collected together and squeezed with the clean fingers and blotted between filter-paper without loss, as it is not at all sticky, and replaced on the sieve in a thin flake, which will dry quickly. The sieve and its contents are then placed in an oven maintained at 90° to 100° C. and dried until there is no further loss in weight. This usually takes about 15 minutes. The weight of sieve plus pectin minus the weight of sieve equals weight of pectin in 10 grams of the juice.

This quantity multiplied by ten gives the percentage of pectin. It is advisable for carrying out this test with fair accuracy that the juice should not contain more than about 1 per cent. of pectin. If it contains more it should be diluted to a known extent with water and the test carried out on 10 c.c. of the diluted juice, the percentage of pectin being calculated on the original juice by multiplying by the degree of dilution.

This test is exceedingly valuable for works purposes, as it is rapid and qualitative as well as quantitative; also the acetone is easily recovered for use over again by distillation.

The apparatus required is of simple type, such as a stock of beakers, a 10 c.c. pipette, a 100 c.c. measuring cylinder, a chemical balance capable of weighing to a milligram, several small sieves, a small water-jacketed drying oven, glass rods, distilled water, filter-paper, etc., also a flask and condenser for recovering acetone.

Weeping is caused by the acidity of the jelly being too high, and may often be remedied by adding a small proportion of a salt such as sodium citrate. The question is somewhat complicated, however, and for a full discussion I must refer you to Bulletin No. 144 issued by the University of Delaware Agricultural Experiment Station, U.S.A., entitled "Fruit Jellies No. IV.: The Rôle of Salts," by P. B. Myers and G. L. Baker.

It would, as you will see if you read this pamphlet, be impossible to give you the proportions of salt to add, or even state how far it is likely to be effective, without knowing the nature and acidity of the juice which is being used, because

the method is not always successful for reasons which Myers and Baker explain.

I suggest, however, that you try the effect of adding about 0·5 gram of sodium citrate per 100 c.c. of juice with small trial boils and reduce this quantity until a good jelly is obtained. If the citrate of soda (use di-sodium hydrogen citrate) is not successful, sodium tartrate, or sulphate, or even ordinary common salt should also be tried in small proportions like 0·5 to 0·1 gram per 100 c.c. of the juice. (The above information was kindly supplied by T. N. Morris, M.A., of the Low Temperature Research Station, Cambridge.)

231. *We have been experimenting with the use of peanuts (ground nuts) in chocolate, but in spite of roasting we cannot get rid of a twang which is objectionable in the finished article. We believe there is a modern process of blanching which will overcome the difficulty.* (London.)

We also understand there is a process of modifying the flavour of these nuts by blanching with steam under pressure, but even this does not entirely remove their characteristic taste. We do not know whether you have looked for the source of the trouble in the red husk of the nuts. In preparing a very fine grade of oil the husks are removed from specially selected high-grade nuts, and in this way an oil free from any objectionable taint is obtained. However, we would suggest you get in touch with the Imperial Institute, as it is possible they have made previous investigations into the matter.

232. *Required names of firms able to supply wooden containers to hold 28 lbs. of cream.* (London.)

233. *Could you give us a recipe for preserved sturgeon caviar?* (Norway.)

Supplied full particulars on the subject, largely from information received from the Department of Commerce, Bureau of Fisheries, Washington, D.C., who have given the methods of preparing caviar in Russia and salmon caviar on the Siberian Pacific Coast, where it is one of the most profitable products of the salmon fisheries. There is further information on this subject in *Die Fischwertschaft*.

234. *Where is it possible to obtain guava jelly in tins, for bottling?* (Sussex.)

Referred to L. Souchon, 21, Mincing Lane, E.C. 3.

235. *We require a recipe for a really good thick sauce, a thin sauce, and a good chutney.* (Sussex.)

Recipes supplied.

236. *Where can we obtain particulars of combustor stoves with Cox's burner?* (Sussex.)

Metropolitan Fuel Co., Ltd., 43, Johnson Street, S.W. 1.

237. *Can you tell us of a really good recipe for lemon curd?* (Sussex.)

See this month's FOOD MANUFACTURE. The name of an expert also submitted for guidance in manufacture and details of recipes.

238. *Is there any trade publication for jam makers dealing exclusively with jam manufacture other than your own excellent publication?* (Sussex.)

None.

239. *We are making at the moment anything from 3 to 6 cwts. of ham bones per week. Could you put me on the right lines of dealing with this by-product in relation to bone meal, what plant we should require, and the best manufacturers of same?* (Bolton.)

We recommend enquirer to get in touch with G. Scott and Sons, Ltd., the Industrial Waste Eliminators, Ltd., T. Broadbent and Sons, Ltd., and John Crampton and Co., Ltd. The Industrial Waste Eliminators, Ltd., state that in the preparation of bone meal the fat is extracted from the raw materials, reducing it to approximately 5 to 10 per cent. in the finished product, the quantity remaining in the meal being just that which is necessary for the meal to be beneficial to the maximum possible extent.

When the "Iwel-Laabs" melter is employed, no preliminary crushing of bones, carcase, etc., is necessary, the raw materials being charged into the machine in portions as large as will pass through the charging hopper. In this machine the materials are simultaneously broken up, fat rendered and dried, being subsequently automatically discharged into a percolating tank with a false perforated bottom and filter mat.

The released fat runs off and is placed in fat settling tanks or other receptacles, whilst the residues are placed in the turbine centrifugal fat extractor for final recovery of the fat still adhering to the broken-up particles.

This fat is added to that from the percolating tank and the dried, fat-extracted residues are ready for grinding in the disintegrator and subsequent bagging.

240. *Recipe for the manufacture of confectioners' piping jelly required.* (London.)

See this month's FOOD MANUFACTURE.

241. *We shall be glad to have further information on the use of glycerine in cakemaking.* (Baltimore, U.S.A.)

Any ingredient or process which tends to retain the moisture in a cake is of the greatest importance to the cake maker. Premature staleness is, perhaps, the most frequent cause of loss in his business.

When glycerine is exposed to the air it will absorb moisture and go on absorbing it until the glycerine is diluted to nearly 50 per cent. of its original strength. Moreover, having absorbed this quantity of moisture, it is very loath to let it go again. It is this property of glycerine which is of great value to the confectioner and cake maker.

The utility of such a material in a cake mixing is instantly obvious. Glycerine holds on to the moisture even during the baking process, thus reducing to a minimum the weight losses in the oven. Afterwards it still retains the moisture and keeps the finished cake quite fresh for a far longer period than a cake made without glycerine.

Glycerine has a very high boiling-point, so that none of the glycerine is lost by evaporation during baking. Also, glycerine is of great value in stabilising emulsions. It improves the flavour and appearance of a cake, giving it a higher sales value. For some reason difficult to explain, it also hastens the normal "mellowing" process. This may be attributable to the fact that glycerine is a fermenting agent and that in every cake mixing fermentation takes place before the full "mellowness" comes out. When glycerine is used, less sugar is needed in a mixing.

As a preservative, glycerine is permitted by the Public Health (Preservatives in Food) Regulations, and is largely used for this purpose. It is very successful in the preservation of egg-yolk and in the prevention of mould in dried fruit. This latter property is very important to the maker of fruit cakes. In a fruit-cake mixing containing glycerine, the fruit remains plump and moist and does not form mould. (John Boyd.)

Communications Relating to Previous Enquiries

207. The Hallamshire Vinegar Co., Ltd., is able to assist in questions relating to sauces.

220. The Hallamshire Vinegar Co., Ltd., have experimented for years with caramels, and are ready to give interested parties the benefit of their experience.

194 and 211. The same information required by another subscriber.

212. John Crampton and Co., Ltd., draw attention to the fact that they are acting as sole distributing agents in the U.K. for a U.S.A. manufacture of artificial sausage casings.

193 and 194. The above firm also kindly supplied us with particulars of their machines for shredded suet, etc., and a copy of Palframan's *Butcher's Manual of Hints and Recipes*.

213. Robt. Ingham Clark and Co. are able to supply a sulphur-resisting lacquer.

Trade News

British Butter Supplies.

According to the Board of Trade returns issued last month, more than half the butter imported into Great Britain for the first three months of this year came from Empire sources. The total imports for the first quarter of 1931 were 1,835,113 cwts., of which 1,060,181 cwts. came from Australia and New Zealand. This is 229,921 cwts. more than for the same period of 1930. While the Empire imports are steadily increasing, the imports from Denmark have decreased. In the first quarter of 1930, 509,376 cwts. of butter were imported from Denmark, but for the same period this year the figure is 493,677 cwts., a decrease of 15,699 cwts.

* * *

School for Soda Fountain Dispensers.

A noteworthy piece of trade enterprise is indicated by the action of Messrs. L. Lumley and Co., Ltd., of the Minories, E.C., in opening a school in which soda fountain dispensers can receive a course of training at competent hands. The school also includes arrangements for a condensed course suitable for soda fountain managers, opened on the 13th ult. The course of training, which lasts a fortnight, is set out so that each pupil receives in the first week theoretical knowledge upon all points connected with the construction and working of the soda fountain, cleaning and special points regarding sanitation, ice-cream making, foundation of soda fountain service, formulæ for serving soda fountain confections, and also the entire business of the soda fountain luncheonette section. The school will be conducted by instructors who have had experience of this work in the United States, and the most up-to-date methods will be taught. The instructors will be able to emphasise from experience the particular points which enable a properly run soda fountain section to be a profitable department of any business. The second week will be given up to practical training, and the pupil will then put into operation, under an expert dispenser, the knowledge that has been acquired during the previous week. Certificates will be issued to all pupils who reach the required proficiency.

* * *

New Swedish Fish Meal Plant.

A plan has been worked out in Sweden for the construction of a fishermen's co-operative fish meal factory, according to a report received from Goteborg. It is suggested that the factory should be established in the neighbourhood of Goteborg, either at a permanent station ashore or in the form of a floating manufacturing plant. The plan, as outlined, provides for the organisation of a company or corporation in which only fishermen and owners of steam trawlers shall be shareholders. Investigations have been made into the various kinds of machinery needed for the proposed plant, and offers have been received, but not accepted, inasmuch as the plant is still in the project stage.

* * *

Industrial Waste Eliminators, Ltd., have recently issued a pamphlet entitled "More Profit within Your Grasp," describing the profits which can be obtained by the treatment of waste animal matter in their dry-rendering plant. Incidentally, they announce that they have recently been awarded contracts for the installation of their Iwel-Laabs plant in abattoirs as far apart as Shanghai and Coventry.

* * *

Pure Nickel for the Food Industry.

Some of the many forms in which pure nickel is currently used in the food and chemical industries are described in an illustrated brochure issued by the Berndorf Metal Works, Ltd., of 12, Hatton Garden. A useful feature of this little publication is the appendix of tables giving the resistance of pure nickel to corrosion by various chemical reagents at different concentrations and temperatures.

* * *

Aid for Machine Control.

A predetermined counter which will stop a machine, or operate an audible or visual alarm when a certain number is reached, is described in pamphlet No. 30 S., of Veeder-Root counters, issued by Messrs. F. E. Dickinson and Co., Ltd., St. Andrew's House, Holborn. The uses of this counter are many and obvious, and it has an additional feature which provides for continuous operation of the alarm, electric light, bell, or stop motion until it has received attention. This feature is of great value, because it ensures the alarm receiving attention, prevents the operator from starting on the next cycle of operations without resetting, and, of course, nullifies error caused by forgetfulness.

* * *

British Chemical Plant Exhibition.

Concurrently with the Jubilee Week of the Society of Chemical Industry (July 13 to 18), a comprehensive exhibition of British chemical plant and research and recording instruments will be held at the Central Hall, Westminster. The exhibition, which will be opened by Sir Harry McGowan on Monday morning, will cover the whole range of the industry, and practically every important firm of British chemical plant manufacturers will be exhibiting. A section of the exhibition will be devoted to the work of the Department of Scientific and Industrial Research, and of the various research associations dealing with the following industries: boots, shoes, and allied trades; cast iron; leather; linen; non-ferrous metals; paint, colour, and varnish; rubber; and wool. FOOD MANUFACTURE will be represented, with other technical publications of Messrs. Leonard Hill, Ltd., and complimentary tickets of admission to the exhibition and catalogues are available to any interested subscribers who make application to us.

* * *

B.C. Salmon Canning in 1930.

The salmon canning industry in British Columbia suffered some loss through its inability to market at satisfactory prices the exceptionally large pack of 1930, according to a report from Vancouver, B.C. The industry encountered keen competition in foreign markets and endeavoured to counteract the loss in foreign sales by an extensive domestic advertising campaign, the expense of which is being partly borne by the Dominion Government. Sufficient time has not elapsed to indicate the results of such efforts, but the companies sponsoring this campaign have been compelled by domestic competitors to reduce the price of Sockeye—chiefly consumed in the home market—from £2 18s. to £2 10s. a case for talls, and from about £3 2s. to £2 14s. a case of halves.

* * *

As a result of the large carry-over which most canneries expect to have from the 1930 salmon pack, it is anticipated that they will not extend their operations in efforts to procure the maximum catch in 1931, although the salmon run this year ordinarily may be expected to be considerably smaller than in 1930. In this connection, it is estimated that at least 40 per cent. of the canneries that operated in 1930 will not be in service in 1931. The Dominion Department of Fisheries has published several changes in fisheries regulations which will affect the industry in British Columbia. The most important changes applicable to salmon fishing in this province are as follows: The minimum mesh for salmon purse seines is established at three and a half inches; salmon gill nets used in District No. 1, with the exception of the Fraser River, may have a maximum length of 200 fathoms as compared with a previous length of 150 fathoms; the sockeye fishing season on the west coast of Vancouver Island and in the Nimpkish and Hayden areas on the east coast have been extended, and may now open on May 15 instead of June 1; the Chief Supervisor of Fisheries for British Columbia may prohibit the use of salmon gill nets of such sized mesh as he may consider undesirable in the interest of fish conservation.

Soup Canning in Canada.

A Canadian canning company, whose product is nationally advertised throughout the Dominion, plans extensive alterations in its Vancouver factory to permit the manufacture of canned soups. When the alterations are completed it is expected that the plant will take care of all the firm's Western Canadian business. It is roughly estimated that British Columbia alone consumes 100,000 cases of soups per year, 60 per cent. of which is imported from foreign countries, the remaining 40 per cent. from Eastern Canada. In actual figures, approximately £100,000 per annum, which has hitherto been sent out of the province, will remain there to create employment, it is claimed, as a result of the step. Local can and box manufacturers, lithographers, printers, and other local industries will also share in the advantages. The president of the Dominion Canners, B.C., Ltd., has expressed himself as being pleased with the general business conditions in British Columbia. He states that it is the rapidly increasing consumption of Aylmer soups for the last year or so that has made this expansion of their business possible, and he believes that his directors are amply justified, consequently, in making this large capital expenditure.

* * *

Brazilian Import Regulations.

A Brazilian Decree (No. 19604), dated January 19, 1931, regulates the inspection of national and imported foodstuffs, according to information furnished in a report from Rio de Janeiro, Brazil. These new regulations are similar to those already existing, except that they permit foodstuffs to be packed with substances which modify the quality or nutritive value, provided a statement to that effect is made on the container. Similarly, one of the normal elements may be extracted in whole or in part if this is clearly indicated. Whereas the former regulations provided that only foodstuffs which had been subjected to packing or preserving processes were to be analysed before being admitted for sale or consumption, this provision is now broadened to include all foodstuffs. The labelling regulations are also modified to require on the labels, the name of the product, and the location of the factory or place where produced, in addition to the previous data required. Provision is made for analysis of all imported comestible products before these may be sold or displayed for sale in any part of Brazil.

* * *

Useful Technical Service.

There are few who have not admired the liberal policy associated with many American business concerns of providing technical service to all who may have difficulties or questions to ask concerning practical points arising out of the uses and applications of products. Signs are not wanting that the more progressive firms on this side are coming more and more to see the wisdom in this; one is surprised that the policy of studying the interests of one's clients and keeping them supplied with really *useful* information in respect of the products they are purchasing and using every day, as well as suggesting new uses to which these products may be put, has not caught on more generally. As stated above, there are many exceptions among the more progressive firms, and two such exceptions of outstanding interest are Messrs. W. J. Bush and Co., Ltd., and Messrs. A. Boake, Roberts and Co., Ltd., both of London.

South Africa to grow Chicle

WITHIN the next few months South Africa may become an important supplier of "chicle" the base of American chewing gum, states the Assistant Trade Commissioner at Johannesburg.

A rather suprising chain of events has led to the foundation of this new industry. During the great post-war rubber boom a number of South African investors examined the chances of turning into account the local sources of crude rubber. Aloes in Namaqualand, bushes in Zululand, and, above all, the euphorbias, or candelabra-shaped "nabooms" of the Transkei and elsewhere, were tested by rival concerns. However, the difficulties experienced in collecting the sap in the open country areas, and the steadily declining price of rubber, saw the gradual extinction of all of these firms with the exception of one, which managed to carry on operations and succeeded in securing concessions, covering hundreds of miles, for the exclusive right to collect euphorbia latex.

In 1926 a director of this Union company, with certain partially refined samples of the South African rubber, left for a trip to Great Britain and the United States. Many difficulties were encountered in these centres, but eventually he was successful. An industrial engineer went to South Africa in March, 1927, for the purpose of studying this product and devising a convenient and economic method of preparing the rubber for export. This engineer was actually in the country for about three years, and, during this time, every effort was made to find a process whereby the latex could be shipped to America in a semi-manufactured state, without melting in the tropics or congealing in colder regions.

Steadily dropping prices for rubber caused a definite change in the plans of the interested company, and it became necessary and advisable to examine the latex along new lines. After considerable research work, it was found that the juice from a certain type of euphorbia (over 400 species are known) contained turpentine, certain kinds of resin, and chicle.

The discovery of chicle immediately became an important consideration. According to reports, the South African product compares very favourably with the Latin-American variety, and a renewed activity was seen in the local enterprise.

Beyond the fact that this sap was being collected in various parts of the eastern Cape Province in quantities of about 1½ tons per week, no one seems to have known what was developing until the recent announcements. At King William's Town, the headquarters, special warehouse, a laboratory, and other equipment is understood to have been erected. It is estimated that more than £10,000 has been spent on research work alone during the past three and a half years. The major problem facing the specialists was the elimination of an obnoxious smell that clings to the chicle, and it is now said that this difficulty has just been solved.

It is further understood that consent and approval have been given to projected large-scale exploitation plans. Gangs of natives are to do the tapping, under the supervision of whites, and a vast expanse of territory is to be covered. Special knives, made for the express purpose of treating the local trees, are to be used. These knives are said to be so shaped as to prevent injury to the euphorbia itself, while allowing the latex to trickle into the collector's bucket. Tapping takes place every six months and continues for about twenty-one years, after which time the tree or bush dies. As there are, according to estimates, some 30,000,000 plants in the concessioned area, there seems little prospect of exhaustion, particularly in view of the fact that new plants are continually reaching the mature stage.

This news has been well received in the Union, which is naturally glad to see a promising new industry establishing itself as a supplement to the mining and pastoral activities. When in full swing, it is expected that the collection of the chicle will give employment to several thousand men.

Financial News

The Editor cannot accept responsibility for any errors which may appear in the Financial News Section.

During the financial year which closed on November 30 last a net profit of £226,218 was realised by **Cerebos, Ltd.**, manufacturers of the well-known condiment. This figure compares with £213,231 in 1929, and with £177,326 for the previous twelve months, and constitutes a record in the history of the company, which was registered in 1903 and acquired additional properties in 1920. The authorised share capital is £500,000, all of which has been issued and paid up in the form of ordinary shares of £1 denomination, and for the third successive year the dividend of 30 per cent. is being maintained. The final appropriation figures relating to the past year are summarised below :

	£	£
Brought forward from 1928-1929 ...	92,318	
Net Profit—year ended November 30, 1930	226,218	
Disposable Balance		£318,536
30% dividend on £500,000 Shares of £1 each		150,000
Transferred to Reserve		50,000
Carried forward to 1930-1931		118,536
		£318,536

The reserve fund now shows a credit balance of £198,615, apart from a capital reserve amounting to £52,543. Goodwill, patents, and trade-marks figure on the balance sheet at £158,078, as before, and the sum owing to creditors and suppliers has been reduced from £152,737 to £149,066. The following are the principal assets :

	Nov. 30, 1930. £
Freehold and Leasehold Property, etc.	274,885
Debtors...	68,442
Stocks	61,524
Cash	293,663
Shares in Subsidiary	54,784
British Government Securities and Other Investments	257,385

At the recent price of 6⅛ the shares yield 4·9 per cent.

As the result of the acquisition of the entire share capital of **Lea and Perrins, Ltd.**, the balance of net profit realised by **H.P. Sauce, Ltd.**, during 1930 is nearly 50 per cent. higher at £236,903, and the dividend of 30 per cent. on the ordinary shares is being maintained on a much larger capital. After adding £48,002 brought forward from the previous account, there was a disposable balance of £284,905, of which the dividend on the 7 per cent. preference shares takes £14,105, and the ordinary dividend £151,455, and after allocating £70,000 to reserve, bringing that fund up to £155,000, there remains a balance of £49,345 to be carried forward to the next account. Goodwill does not figure on the balance sheet, and the financial strength of the company can be judged by the following items :

	Dec. 31, 1930. £
Property and Plant	248,967
Investments in Subsidiaries	312,816
Investments in Trustee Securities	572,763
Cash	101,229
Debtors...	50,039
Stocks	108,464
Creditors, including Contingencies	129,020

The preference shares were recently quoted on the Birmingham Stock Exchange at 26s., and the ordinary shares at 99s. 6d.

The difficulties encountered in connection with export trade during the past year are reflected in a material decline in income of the associated companies of **Bovril, Ltd.**, this income aggregating £52,865 as compared with £73,620 in 1929. The balance of gross profit realised during the year was £568,636 as against £603,197, but, owing to a reduction in general expenses and a lower charge for interest on the 5½ per cent. eight-year notes, the net profit was only £28,637 lower at £301,183. The authorised capital of the company is £3,000,000, and the whole amount has been issued and paid up in three classes—viz., £1,000,000 in 6 per cent. cumulative preference £1 shares; £1,000,000 in 7½ per cent. cumulative ordinary £1 shares; and £1,000,000 in deferred £1 shares. The dividend on the deferred shares is being maintained at the rate of 13 per cent., but only £30,000 has been allocated to reserve as compared with £60,000 a year ago. The appropriation figures are made up as follows :

	£	£
Brought forward from 1929	75,955	
Net Profit—year ended December 31, 1930	301,183	
Disposable Balance		£377,138
6% dividend on £1,000,000 Cumulative Preference £1 Shares		60,000
7½% dividend on £1,000,000 Cumulative Ordinary £1 Shares		75,000
13% dividend on £1,000,000 Deferred £1 Shares		130,000
Transferred to Reserve		30,000
Carried forward to 1931		82,138
		£377,138

The reserve, which includes premiums on shares, now amounts to £1,250,000, and goodwill and trade-marks figure on the balance sheet at £2,414,323. The stock of cattle, products, materials, and stores is higher than a year ago, and the total sum owing by customers and debtors is considerably lower. At the recent price of 90 the 4½ per cent. debenture stock yields 5 per cent., and the 5½ per cent. notes, of which there are two series, are quoted at 101. At 23s. 3d. the preference shares return 5·16 per cent., while the ordinary shares at 24s. 2d. give a yield of 6·2 per cent. The deferred shares were recently marked at 37s.

The dividend on the 7½ per cent. cumulative preference shares of **Lang and Stevenson, Ltd.**, due on February 1, was postponed. The company was registered in 1927, and owns factories and other premises in Glasgow, and all the shares of Lang's Bread Co., Ltd., the authorised share capital being £405,000, all of which has been paid up in the form of £260,000 7½ per cent. cumulative preference (the dividend on which takes £19,500 per annum); £120,000 ordinary shares; and £25,000 deferred ordinary 4s. shares. The accounts are made up to December 31 each year, and are usually submitted in March.

The accounts of **British Chewing Sweets, Ltd.**, covering the twelve months ended April 30, 1930, revealed a loss of £3,964. Registered as a private concern in March, 1927, it was converted into a public company in August, 1927, the authorised share capital being £75,000, of which a total of £72,740 has been issued and paid up in three classes—viz., £47,740 in 10 per cent. cumulative preference £1 shares; £24,950 in founders' ordinary 1s. shares; and £50 in deferred 1s. shares. There are also £50,000 of 5 per cent. first mortgage debentures outstanding, redeemable at par on or before January 1, 1934. The loss has been added to the debit balance brought forward, the debit balance now amounting to £7,564, and the following are the principal balance sheet items :

	April 30, 1930. £
Goodwill, at Cost	9,470
Preliminary Expenses, etc.	11,692
Investments in Subsidiary Companies, at Cost...	16,792
Due from Subsidiaries	48,668
Cash	755

Compared with £58,828 realised in 1929, **Ewart and Son, Ltd.**, makers of geysers, etc., made a net profit of £38,222 during the twelve months ended December 31 last, and consequently the ordinary dividend has been reduced from 41 per cent. to 36 per cent. The company was registered in 1900 and controls **Saunders and Connor (Barrhead), Ltd.** The issued share capital consists of three classes—viz., £100,700 16 per cent. cumulative preference 10s. shares; £79,370 ordinary 5s. shares; and £75 management shares of 5s. each. The appropriation of profit figures are balanced as below:

	£
Brought forward from 1929	20,927
Net Profit—year ended December 31, 1930	38,222
Disposable Balance	£59,149
16% dividend on £100,700 Cumulative Preference 10s. Shares	16,112
36% dividend on £79,370 Ordinary 5s. Shares ...	28,573
Carried forward to 1931	14,464
	£59,149

The principal assets and liabilities, as shown on the company's balance sheet, are enumerated below:

	Dec. 31, 1930. £
Factory Buildings, etc.	53,317
Plant and Machinery	6,949
Debtors	32,741
Stocks	53,340
Cash	21,745
Investments in Subsidiaries	28,600
Other Investments	55,750
Reserve for Taxes, etc.	16,502
Creditors	12,958
Goodwill and Trade-marks	50,000
Dividend Equalisation Fund	20,000
General Reserve	42,499

The preference shares were recently quoted at 19s., and the ordinary at 15s. 9d.

The profit realised by **Johnston, Mooney and O'Brien, Ltd.**, bakers and millers, etc., during the past year amounted to £15,149, an increase of £2,775 over the figures for the previous twelve months. From this profit must be deducted interest on £25,000 debentures at the rate of 4 per cent.—*i.e.*, £1,000—leaving a net profit of £14,149. This company was registered in 1889, and the entire authorised share capital of £150,000 has been issued and paid up, comprising £50,000 6 per cent. cumulative preference £5 shares and £100,000 ordinary shares of the same denomination. In 1928 and 1929 an ordinary dividend of 6 per cent. was paid, and this rate has been maintained plus a bonus of 1 per cent., the final account being made up as follows:

	£
Brought forward from 1929	10,557
Net Profit—year ended December, 1930 ...	14,149
Disposable Balance	£24,706
6% dividend on £50,000 Cumulative Preference £5 Shares	3,000
6% dividend on £100,000 Ordinary £5 Shares ...	6,000
1% bonus on £100,000 Ordinary £5 Shares ...	1,000
Improvements and Additions written off	4,000
Allocated to Employés' Fund	500
Carried forward to 1931	10,206
	£24,706

At 78s. the preference shares yield 7·7 per cent., and the return on the ordinary shares at the recent price of £3 works out at £11 13s. 4d. per cent.

The final dividend of 3¾ per cent. announced by **United Grain Elevators, Ltd.**, makes 6¼ per cent. for the year ended December 31 last, an interim dividend of 2½ per cent. having been paid in July last. This compares with 8¾ per cent. paid during each of the five previous years, the margin of profit having declined from £11,052 in 1929 to £7,545. The company was registered in 1898 to acquire several concerns, and in 1920 additional ordinary shares were issued, the total share capital now being £100,000 in shares of £1 each, of which £40,000 are in 5½ per cent. cumulative preference, and the balance in ordinary shares. The appropriation figures are summarised below:

	£
Brought forward from 1929	2,909
Net Profit—year ended December 31, 1930	7,545
Disposable Balance	£10,454
5½% dividend on £40,000 Cumulative Preference £1 Shares	2,200
6¼% dividend on £60,000 Ordinary £1 Shares ...	3,750
Transferred to Reserve	1,000
Carried forward to 1931	3,504
	£10,454

A year ago £2,000 was allocated to the reserve.

The final accounts of the **Cardiff Pure Ice and Cold Storage Co., Ltd.**, covering the 1930 financial year disclose a net profit of £5,557, an increase of £294 when compared with the previous year's figure. To this profit must be added the sum of £5,590 brought in from the 1929 appropriation account, giving a disposable balance of £11,147. The company was registered in 1887, and in 1920 the share capital was increased from £120,000 to £200,000, of which £123,510 has been subscribed and called up in £10 shares of one class only. In 1929 the ordinary dividend was raised from 3 per cent. to 4 per cent., and this rate is being maintained, the final account showing the following:

	£
Brought forward from 1929	5,590
Net Profit—year ended December 31, 1930	5,557
Disposable Balance	£11,147
4% tax free dividend on £123,510 Shares of £10 each	4,941
Carried forward to 1931	6,206
	£11,147

During the past year £7,000 of 5 per cent mortgage debentures of the **Welsh Cold Stores and Ice Co., Ltd.**, were acquired.

The balance of profit realised by the **Bon-Accord Ice and Cold Storage Co., Ltd.**, during the past year amounted to £9,074, which compares with a profit of £9,697 realised in 1929. This company was registered in 1898, and the authorised share capital is £30,000 in shares of £1 each, of which £23,468 has been subscribed and paid up. The dividend is being maintained at 22½ per cent., and £1,893 transferred to reserve, the carry forward being increased from £1,936 to £2,336. Last year the sum of £3,196 was written off the book value of buildings, etc.

The profit and loss account of **Harrison, Barber and Co., Ltd.**, bone-crushers and bone-boilers, etc., covering the year ended December last, discloses a net profit of £8,375 as compared with £11,307 realised during the previous twelve months. The company was registered in 1886 and owns several establishments in London, the authorised share capital being £130,000, all of which has been issued and paid up in the form of £5 shares of one class, the dividend on which has been reduced from 8 per cent. to 6 per cent. The final appropriation figures are given below:

	£
Brought forward from 1929	2,931
Net Profit—year ended December 31, 1930	8,375
Disposable Balance	£11,306
6% dividend on £130,000 Shares of £5 each ...	7,800
Allocated to Depreciation	1,000
Carried forward to 1931	2,506
	£11,306

An interim dividend of 2½ per cent. was paid in July last.

Food Industry Stock and Share List

	April, 1931.	*Par Value.*	*Mar*, 1931.
Aerated Bread : Ord. ...	17/9	£1	17/3
6½% Pref.	21/2	£1	20/5
Apollinaris : Ord.	5/10	£1	5/6
Assoc. Biscuit : 6½% Pref. ...	23/-	£1	23/3
Avery (W. and T.) : Ord. ...	47/3	£1	43/-
5% "A" Pref.	4¾	£5	4½
5½% "B" Pref. ...	20/6	£1	20/6
Benger's Food : Ord. ...	31/-	£1	29/-
6% Pref.	4⅞	£5	4⅝
Bovril : Ord.	24/-	£1	24/2
Deferred	36/5	£1	37/-
6% Pref.	23/-	£1	23/3
4½% Deb.	91	£100	90
British Aluminium : Ord. ...	30/3	£1	29/6
6% Pref.	21/4	£1	21/3
British Thomson Houston : 7% Pref.	23/4	£1	23/9
Bucknall (H.) and Sons. : Ord.	22/-	£5	22/-
Cadbury : 6% Pref.	23/-	£1	22/9
8% 2nd Pref.	28/7	£1	28/-
Callard, Stewart and Watt : 6% Pref.	17/9	£1	17/6
Carrs : 6½% Pref.	20/6	£1	20/4
Cerebos : Ord.	5¾	£1	6⅛
Chivers : 6% Deb.	101	£100	102
Cinzano : 7½% Pref. ...	21/6	£1	21/-
Clark's Bread : Ord. ...	22/6	10/-	22/-
Cow and Gate : 7½% Pref.	22/9	£1	22/6
Criterion Restaurants : Ord.	6/3	5/-	6/2
Crosse and Blackwell : Ord.	1/6	1/-	1/4
7½% Pref.	9/4	15/-	8/3
6½% Deb.	91	£100	90
Dutch Margarine : 5½% Pref.	21/3	£1	21/-
English and Dutch Meat : 8% Deb.	49⅛	£100	48
Ewart and Son : Ord. ...	16/-	5/-	15/9
16% Pref.	19/6	10/-	19/-
Foster Clark : Ord.	42/6	10/-	47/6
Fry's : 8% "B" Preferred	22/4	£1	22/3
Fullers : Ord.	34/-	£1	33/9
7% Pref.	18/9	£1	18/6
Gordon Hotels : Ord. ...	11/6	£1	9/7
4% Perp. Deb.	69	£100	68½
Grape Produce : 8% Ptg. Pf'd. Ord. ...	9d.	5/-	9d.
H.P. Sauce : Ord.	94/6	£1	99/6
Hill (W.) : Ord.	7/-	£1	6/-
Holbrooks : Ord.	15/-	5/-	14/9
5% Pref.	4⅜	£5	4⅜
Home and Colonial : Ord. ...	14/5	4/-	14/4
15% Cum. Ord.	48/9	£1	50/-
6% Cum. Pref.	5⅝	£5	5⅝
Honywood Hotels : Ord. ...	1/8	2/6	1/6
8% Pref.	15/-	£1	14/9
Hovis : 6% Cum. Pref. ...	23/8	£1	23/-
Imperial Chemical : Ord. ...	16/6	£1	15/6
Deferred	3/10	10/-	4/-
7% Cum. Pref.	21/-	£1	20/-
International Tea : Ord. ...	21/6	5/-	19/7
6% 1st Pref.	23/5	£1	23/6
7% "A" Pref.	25/-	£1	25/5
Jones (R. E.) : Ord.	1/4	5/-	1/6
10% Pref.	7/9	£1	8/1
Jurgens : 7% Cum. Partg. Pref. ...	23/8	£1	23/4
Kia-Ora : Ord.	8/3	10/-	7/11
Lipton : Ord.	5/4	1/-	5/-
5% 1st Pref.	8/9	10/-	7/4
6% Pref.	10/5	10/-	8/6
6% Deb.	100	£100	99⅜

	April, 1931.	*Par Value.*	*Mar*, 1931.
Liebigs : (Reg.)	11¼	£5	11½
(Bearer)	11¼	£5	11½
5% Pref.	95/-	£5	97/6
Lovell and Christmas : Ord.	11/-	£1	10/-
Lyons : Ord.	94/6	£1	94/5
"A" Ord.	94/-	£1	93/9
5% Pref.	21/-	£1	20/1
6% Preferred Ord. ...	22/6	£1	23/-
7% Pref.	26/9	£1	26/9
8% Pref.	30/8	£1	30/-
Manbre and Garton : D'f'd.	12/6	2/-	11/-
Mather and Platt : Ord. ...	30/-	£1	29/-
Maypole Dairy : 20% Preferred	16/9	5/-	16/6
Deferred	4/6	2/-	4/2
5% Pref.	19/9	£1	20/-
Mazawattee Tea : Ord. ...	12/6	6/8	12/1
Meadow Dairy : 7½% Pref.	23/9	£1	23/7
Mellin's Food : 6% Cum. Pref.	2/-	£1	3/9
Molassine : 7% Pref. ...	12/-	15/-	11/7
Nathan (J.) : Ord.	2/3	1/-	2/3
7% Pref.	16/9	£1	17/-
8% Preferred	8/6	10/-	6/9
Nestlés : 8% Pref.	30/11	£1	29/10
Parkinson and Cowan : Pref.	21/-	£1	21/-
Pascall (J.) : 8% Preferred	6/-	£1	6/-
Peak Frean : 5% Pref. ...	18/2	£1	19/2
8% "A" Pref.	25/-	£1	25/6
Radcliffs Edible : Ord. ...	1/3	1/-	1/3
8% Pref.	7/-	10/-	7/-
Radiation : Ord.	35/6	£1	32/3
6% Pref.	22/9	£1	22/7
Rowntree : 7% 2nd Pref. ...	22/8	£1	22/6
Salt Union : Ord.	26/3	£1	25/6
7% Pref.	28/2	£1	27/6
4½% Deb.	83	£100	82
Schweppes : Deferred ...	29/-	£1	26/-
4% Deb.	78	£100	77
Scribbans : Ord.	13/10	£1	14/3
Deferred	1/10	1/-	1/11
Slaters and Bodega : Ord. ...	26/-	£1	26/-
6½% 2nd Pref.	21/3	£1	21/-
Smithfield and Argentine Meat : 7½% Cum. Pref.	18/-	£1	16/4
Smith's Potato Crisps : Ord.	9/-	5/-	9/2
Spiers and Pond : Ord. ...	13/9	10/-	12/6
6½% Pref.	21/-	£1	20/9
5% Deb.	97	£100	96½
Spillers : Ord.	26/-	£1	24/-
6% Pref.	19/3	£1	19/-
Deferred	9/-	£1	7/6
Strand Hotel : Pref'd. Ord.	66/6	£1	67/6
Tate and Lyle : Ord. ...	36/-	£1	35/-
6½% Pref.	24/6	£1	24/2
Trust Houses : Ord. ...	13/7	£1	14/-
Unilever : Ord.	40/6	£1	38/3
7% Preferred	24/-	£1	23/9
Union Cold Storage : 6% Pref.	19/3	£1	20/8
7% Pref.	21/6	£1	22/6
10% Pref.	27/-	£1	28/-
United Caterers : Ord. ...	11½d.	5/-	9d.
United Dairies : Ord. ...	33/-	£1	32/3
6% Pref.	21/9	£1	22/-
United Glass Bottle : Ord. ...	19/8	£1	21/-
Preferred	22/-	£1	22/1
United Molasses : Ord. ...	8/9	£1	12/3
6% Pref.	9/10	£1	11/5
Van den Berghs : 15% Preferred Ord. ...	10/6	5/-	10/6
Victoria Wine : Ord. ...	6/8	5/-	6/3

New Companies

HORNE AND SUTTON, LIMITED. (255576.) Old Trinity House, 5, Water Lane, Great Tower Street, E.C. 3. To take over the bus. of tea mchts. formerly cd. on at Old Trinity House, E.C. 3, as "Horne and Sutton." Nom. Cap.: £15,000 in £1 shares (10,000 "A" and 5,000 "B").

JOHN HILL (HOPS), LIMITED. (255393.) The Cross, Ledbury, Herefordshire. To carry on the bus. of mnfrs. and importers and exporters of and dlrs. in agricultural and farming machinery, cattle and other foods, seeds, etc. Nom. Cap.: £7,500 in £1 shares (2,500 pref. and 5,000 ord.).

LONDON FOODPACKERS, LIMITED. (255398.) 115 and 117, Pancras Road, St. Pancras, N.W. To enter into an agmt. with Foodpackers, Ltd., whereby the company are appointed agents for the sale and distribution of "Lion" Potato Crisps; and to acquire an option to purchase the goodwill and/or plant and equipment of the bus. of Foodpackers, Ltd., etc. Nom. Cap.: £1,000 in £1 shares.

BLACKPOOL DAIRIES, LIMITED. (255460.) 11, Ironmonger Lane, E.C. 2. To carry on the bus. of dlrs. in dairy, farm, and garden produce, etc. Nom. Cap.: £100 in £1 shares.

BRIERBREADS, LIMITED. (254816.) 17, Katherine Street, Croydon, Surrey. To carry on the bus. of mnfrs. of and dlrs. in foods of all kinds, etc. Nom. Cap.: £500 in £1 shares.

CAKE DECORATION COMPANY, LIMITED. (254655.) To carry on the bus. of almond grinders, mnfrs. of bakers' and confectioners' sundries, etc. Nom. Cap.: £1,000 in £1 shares.

RICHARDSON AND BAMFORTH, LIMITED. (255553.) West Huntington Hall, York. To take over the bus. of a potato mcht. cd. on by J. R. Richardson at West Huntington Hall, near York, and elsewhere, together with the freehold property known as West Huntington Hall aforesaid. Nom. Cap.: £3,000 in £1 shares.

J. H. FRISBY, LIMITED. (254825.) 12, Albion Place, Wisbech, Cambs. To take over the bus. of a grocer, provision mcht., etc., cd. on by J. H. Frisby at Wisbech, Cambs. Nom. Cap.: £2,000 in £1 shares.

GOLDEN CRISPS, LIMITED. (254935.) To carry on the bus. of mnfrs. of and dlrs. in potato crisps, etc. Nom. Cap.: £4,000 in £1 shares.

HURST, PARNELL AND COMPANY, LIMITED. (254824.) To take over the bus. of fruit mchts. cd. on at 28, Welsh Back, Bristol, as "J. W. Hurst and Co." Nom. Cap.: £3,000 in £1 shares.

HOLBEACH DAIRY FARM COMPANY, LIMITED. (254711.) To carry on the bus. of farmers, graziers, etc. Nom. Cap.: £1,000 in £1 shares. Dirs.: To be appointed by the subs. Qual. of dirs.: One share. Remun. of dirs.: As voted by the company. Subs.: L. Attwell, 20, North Street, Dudley (mang. clk.); C. Failes, 1, Baylie Street, Stourbridge (solr.).

VICTOR PIE AND SAUSAGE MANUFACTURING COMPANY, LIMITED. (254957.) 180, Hamilton Road, West Norwood, S.E. 27. To take over the bus. cd. on at 180, Hamilton Road, S.E., as "The Victor Pie and Sausage Manufacturing Co." After June 30, 1935, power is taken to carry on certain other businesses, including wholesale and retail flour factors, bakers, etc. Nom. Cap.: £1,000 in £1 shares.

A. E. BORGEAUD, LIMITED. (254573.) 7, Gensing Road, St. Leonards-on-Sea. To take over the bus. of a baker and confectioner cd. on by A. E. Borgeaud at St. Leonards-on-Sea. Nom. Cap.: £1,000 in £1 shares.

HYGIENIC BY-PRODUCTS, LIMITED. (254905.) To carry on the bus. of mnfrs. of and dlrs. in products, by-products, and substances made or derived from fish, fish oils, fish refuse, or other materials arising out of the fishing industry, etc. Nom. Cap.: £20,000 in £1 shares.

SATTERTHWAITE'S (CONFECTIONERS), LIMITED. (254172.) 51, Coronation Road, Great Crosby, Liverpool. To carry on the bus. of wholesale and retail confectioners, etc. Nom. Cap.: £2,000 in £1 shares.

WALLAMS, LIMITED. (254205.) To carry on the bus. of genl. mchts., distributors of consumable goods, tobacconists, confectionery agents, etc. Nom. Cap.: £500 in £1 shares.

REES TOFFEES, LIMITED. (254039.) To carry on the bus. of wholesale and retail confectioners, etc. Nom. Cap.: £400 in £1 shares.

W. E. WILLSON, LIMITED. (225196.) 107, Great Barr Street, Birmingham. To take over the bus. of bakers and confectioners cd. on at Great Barr Street, Birmingham. Nom. Cap.: £5,000 in £1 shares.

MELLORS (WORCESTER SAUCE), LIMITED. (254297.) To carry on the bus. of mnfrs. and factors of and dlrs. in sauces, etc. Nom. Cap.: £100 in £1 shares.

SANDWICHES AND HEALTH FOODS, LIMITED. (254305.) To carry on the bus. of mnfrs. of and dlrs. in health, medicinal, and medicated foods; grocers, etc. Nom. Cap.: £800 in £1 shares. Provisional dirs.: H. H. Neve, 41, De Freville Avenue, Cambridge; C. E. Dowell, 64, Hartington Grove, Cambridge.

SHEPPERSON FERTILISER COMPANY, LIMITED. (254011.) To carry on the bus. of seed, bone, and shell crushers, mnfrs. of artificial manures, insecticides, etc. Nom. Cap.: £100 in £1 shares.

JACOMELLIS' RESTAURANT, LIMITED. (255081.) 52, Boar Lane, Leeds. To carry on the bus. of restaurateurs, licensed victuallers, and café proprs. formerly cd. on at Leeds as "Jacomelli and Company." Nom. Cap.: £20,000 in £1 shares.

KHONGEA TEA ESTATE, LIMITED. (254945.) To take over the bus. of tea planters cd. on at Sibsagar, Assam, India, as the Khongea Tea Estate. Nom. Cap.: £60,000 in £1 shares.

FROZAID, LIMITED. (254264.) 186, St. Stephen's House, Westminster, S.W. 1. To acquire the trade-mark "Frozaid," and to work and carry on bus. in connection therewith as mchts., factors, and mnfrs. of, agents for, and dlrs. in, all kinds of goods, products, foods, machinery, utensils, apparatus, chemicals and materials, etc. Nom. Cap.: £1,000 in 1d. shares.

MAISON VALERIE, LIMITED. (254722.) To carry on the bus. of mnfrs. of and wholesale and retail dlrs. in confectionery, etc. Nom. Cap.: £500 in £1 shares. Dirs.: Miss Phyllis M. Neale, 52, Stratford Road, West Bridgford, Notts; Mrs. E. W. Neale, 52, Stratford Road, West Bridgford, Notts.

LINCOLNSHIRE MEAT SUPPLIES, LIMITED. (254719.) To carry on the bus. of butchers, etc. Nom. Cap.: £100 in £1 shares. Dirs.: J. H. Mountain, 13, High Street, Boston, Lincs. (permt. dir. and ch.); J. W. Killick, 52, Carlton Road, Boston, Lincs.

JOHN NUTLEY AND SONS, LIMITED. (254716.) To take over the bus. of fish mchts., etc., cd. on at 69, New Pontoon, Great Grimsby, as "J. Nutley and Sons." Nom. Cap.: £1,500 in £1 shares.

CENTRAL FISHERIES, LIMITED. (253987.) To acquire premises in Bournemouth and/or elsewhere suitable for the reception and storage of fish, shops for the sale of fish, etc. Nom. Cap.: £1,000 in £1 shares.

SUNBEAM PURE FOOD COMPANY, LIMITED. (254200.) 9, Cannon Street, Salford. To carry on the bus. of wholesale grocers and provision mchts., etc. Nom. Cap.: £100 in £1 shares. Dirs.: J. Rothwell, Min-y-Don, 12, Blackfield Lane, Kersal; T. Rothwell, Hazelwood, Manchester Road, Swinton; T. S. Rothwell, Hazelwood, Manchester Road, Swinton; J. A. Rothwell, 1, Cleveleys Grove, Higher Broughton. Qual. of dirs.: £1. Remun. of dirs.: As voted by the company.

The Manufacture of Lemon Curd *(Concluded from page 129).*

facture of lemon curd, and to Fig. 6, which shows a carrying-off pan for taking away the boiling from the boiling pan.

Boiling.—During boiling the following points should be observed: Boil the sugar and flour with the necessary amount of water for a few minutes, taking care to see that the flour has been well broken up into a smooth paste. Now turn off the steam and add the butter and margarine. When melted, add the egg (which must have been thoroughly whisked) and acid. Boil until the batch thickens. It is advisable to keep the batch on stir continually during the entire process.

Current Literature

Fruit and Vegetable Products

149. Standards for Canned Apricots and Cherries. (*Canner*, 1931, March 21, p. 13.)
150. Sugar Contamination: Its effect in Canning Corn. E. J. Cameron and J. Yexair. (*Ibid.*, p. 15.)
151. Sweet Corn Infestation: Its Control. J. J. Davis. (*Ibid.*, p. 19.)
152. Crop Rubbish a Source of Crop Disease. C. T. Gregory. (*Canner*, 1931, March 28, p. 13.)
153. Fertilizing Canning Crops. Dr. Robert Stewart. (*Canning Age*, 1931, April, p. 287.)
154. New Method for the Clarification of Cider. (*Ibid.*, p. 307.)
155. Successful Pineapple Canning. A. Farrell. (*Food Industries*, 1931, April, p. 144.)
156. Determining the Cost of Small Apples. (*Ibid.*, p. 161.)
157. Removal of Spray Residue from Apples. J. R. Neller. (*Ind. and Eng. Chem.*, 1931, March, p. 323.)
158. Fruit Candies. W. V. Cruess. (*Manufacturing Confectioner*, 1931, March, p. 33.)
159. Cocoa-Butter *versus* Coco-Nut Butter. C. F. Langworthy. (*Tropical Life*, 1931, 25, p. 45.)
160. Solvents for Fruit Flavours. H. Bennett. (*Fruit Products Journal*, 1931, February, p. 16.)

Cereal Products

161. Making Uniform Flours. C. G. Harrell and R. E. McCormick. (*Food Industries*, 1931, April, p. 140.)
162. Controlled Mixing gives Good Self-Raising Flour. M. L. Roberts. (*Ibid.*, p. 142.)

Dairy Products

163. Control of Electric Pasteurizing Equipment. H. C. Brunner. (*Food Industries*, 1931, April, p. 148.)
164. Homogenized Milk Finds Favour in Canada. M. H. Hudon. (*Ibid.*, p. 153.)
165. Cream Fillings and Bacterial Contamination. L. H. Shaw. (*Ibid.*, p. 164.)
166. Bacterial Distribution in Milk. A. Lumiere and A. Dubois. (*Comptes Rendues*, 1931, January, p. 21.)
167. Pasteurized Milk. C. Gorini. (*Ibid.*, p. 885.)
168. Discoloured Cheese Rinds. W. Stocker. (*Z. for Bakteriologie*, 1930, December, p. 405.)
169. Spray-Dried Milk Powders. L. H. Lampitt and J. H. Bushill. (*Chemistry and Industry*, 1931, February, p. 125.)

Publications Received

Canned Tomatoes and Tomato Paste. Report of the U.S. Tariff Commission to the President of the United States. Washington. 79 pp. 1929.

Onion Culture. W. R. Beattie. U.S. Depart. of Agriculture. Farmers' Bulletin No. 354. Washington. 27 pp. April, 1930.

The Production of Peas for Canning. C. J. Hunn. U.S. Depart. of Agriculture. Farmers' Bulletin No. 1255. Washington. 24 pp. October, 1927.

Growing Cucumbers for Pickling. J. H. Beattie. U.S. Depart. of Agriculture. Farmers' Bulletin No. 1620. Washington. 17 pp. April, 1930.

Pasteurisation of Cream for Butter-making. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Bulletin No. 156. December, 1914.

Bacteria in Ice-Cream.—II. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Bulletin No. 174. December, 1917.

Factors which Influence the Yield and Consistency of Ice-Cream. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Bulletin No. 180. May, 1918.

A Bacteriological Study of the Method of Pasteurising and Homogenising the Ice-Cream Mix. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Bulletin No. 186. March, 1919.

Influence of Acidity on Flavour and Keeping Quality of Butter. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Bulletin No. 207. August, 1922.

Vinegar Fermentation and Home Production of Cider Vinegar. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Bulletin No. 218. August, 1923.

The Relative Influence of Micro-organisms and Plant Enzymes on Corn Silage Fermentation. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Research Bulletin No. 40. March, 1917.

The Occurrence and Significance of Mannitol in Silage. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Research Bulletin No. 42. December, 1917.

Studies on Formation of Gas in Sweetened Condensed Milk. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Research Bulletin No. 54. September, 1919.

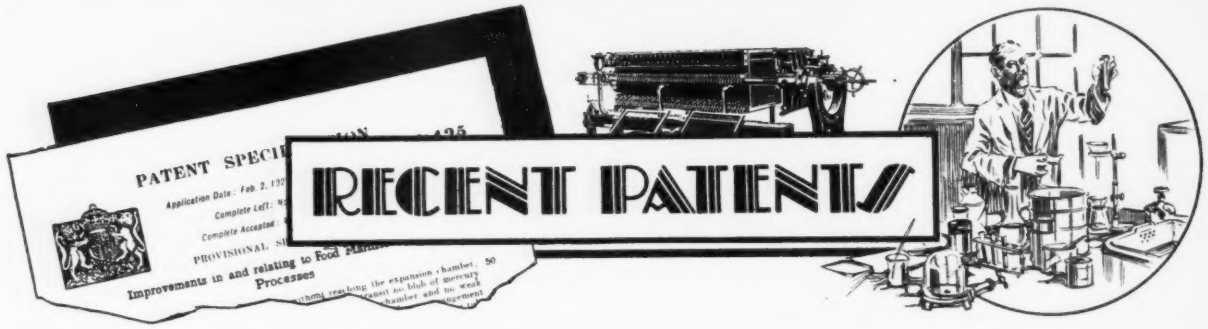
The Volatile Acid Production of Starters and of Organisms Isolated from Them. Agricultural Experiment Station, Iowa State College. Ames, Iowa, U.S.A. Research Bulletin No. 55. September, 1919.

Extensions at Greenwich

THE increasing use of steel equipment in offices, factories, warehouses, libraries, and public buildings has been one of the most noticeable features of modern times. One result of this increasing application of steel is shown in the illustration below of preparations for the erection of further works' accommodation for Messrs. G. A. Harvey and Co. (London), Ltd., the well-known metal-workers, whose premises in London Road already extend over an area of twenty-seven acres.

It is only two years since a large extension was made to this firm's works, but the rapid development of the steel-plate construction and steel furniture and equipment departments, which the new building is to house, made further enlargements necessary. The new premises will be 300 ft. long, 250 ft. wide, and 65 ft. high, and the foundations are being consolidated with a large number of concrete piles to bear the weight of the machinery which is to be installed.

Concrete Piles in Sections Ready for Driving at the New Harvey Building.



These particulars of New Patents of interest to readers have been selected from the Official Journal of Patents, and are published by permission of the Controller of H.M. Stationery Office.

Latest Patent Applications

9059. MACCURDY, J. T., and MAPSON, L. W.: Manufacture of concentrated edible products. March 24.

9081. TAYLOR, G. M.: Food, etc., protector. March 25.

8310. SCHOKOLADENFABRIK MAUXION: Making food substance from cocoa, sugar, and water. March 18.

8494. VITAPACK CORPORATION: Preserving foods. March 19.

7254. BACK, S., and CROSSE AND BLACKWELL, LTD.: Preservation of peas by canning. March 9.

Specifications Published

345,363. ELLIS, R. E. (KHONSTAMM AND CO., INC., H.): Manufacture of compositions for colouring or flavouring foodstuffs.

345,095. GERSTENBERG, A., and BIGUM, H. J. J.: Apparatus for kneading of margarine and other edible fatty substances.

344,055. KELLOGG CO.: Method of producing a cereal food product, and cereal food products when produced thereby.

344,079. STOCK, E. W., and SANDERS, J.: Covers for foodstuffs and other commodities.

Printed copies of the full Published Specifications may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C. 2., at the uniform price of 1s. each.

Abstracts Published

340,785. **Chocolate.** BOISSELIER, H. C., Old Dove House, Kinsbourne Green, near Luton.
A food preparation or sweetmeat consists of partly churned full-cream milk, sugar, and cocoa or chocolate. The sugar is in the non-crystalline, or "fondant," condition. The sugar and cocoa are added while the milk is being converted into cheese and before the full condition of cheese is reached. Vegetable oil—*e.g.*, olive oil—may be added.

Recent Trade Marks

This list of Trade Marks of interest to readers has been selected from the "Official Trade Marks Journal," and is published by permission of the Controller of H.M. Stationery Office

MUSKETEER.—519,688. **Canned fruits and canned vegetables.** SALE AND CO., 52, Bishopsgate, London, E.C. 2. April 8. (Associated.)

RICHVALE.—516,515. **Butter.** DOMINION DAIRY CO., LTD., Bicester Road, Aylesbury, Buckinghamshire. April 8.

GOLDEN FLEECE.—518,055. **Canned fish.** PAUL LUND AND CO., LTD., 2, Wake Green Road, Moseley, Birmingham. April 8.

BEECHDALE.—519,501. **Butter.** E. M. DENNY AND CO., LTD., Hibernia Chambers, London Bridge, London, S.E. 1. April 8.

APEX.—520,745. **Flour.** CARR'S FLOUR MILLS, LTD., Victoria Viaduct, Carlisle, Cumberland. April 8.

FRUOLA.—521,034. **Concentrated fruit juice (not alcoholic).** JOHN BURGESS AND SON, LTD., 1, 2, and 3, Hythe Road, Willesden Junction, London, N.W. 10. April 8.

BRUNOVA.—517,869. **Eggs and poultry (for food).** BERTHA ELLEN LETHBRIDGE, Skibhoul, Burravoe, Shetland. April 1. (By Consent.)

MARIDALE.—519,502. **Butter.** E. M. DENNY AND CO., LTD., Hibernia Chambers, London Bridge, London, S.E. 1. April 1.

KILTIE.—519,398. **Flour sponge mixture, cake mixture, baking powder, and beef suet.** SANDERS BROS. (STORES), LTD., 48, Thomas Street, London, E. 14. April 1. (Associated.) (By Consent.)

QUEEN OF THE SOUTH.—520,158. **Poultry (for food) and eggs, and food for poultry.** The firm trading as QUEEN OF THE SOUTH EGG FARMS, 2, Irving Street, Dumfries. April 1.

MOUNTAIN MAID.—520,643. **Butter and cheese.** AMALGAMATED DAIRIES, LTD., Anzac Avenue, Auckland, New Zealand, and Empire Buildings, Tooley Street, London, S.E. 1. April 1.

SUNBEAM.—518,152. **Cheese, butter, lard (for food), margarine, beef suet, marrow fat (for food), bacon, hams, tinned meats, tinned fruits, tinned fish, tinned vegetables, and tinned soups.** JOHN WHITE AND CO. (BRISTOL), LTD., 105 to 108, Thomas Street, Bristol. February 25. (Associated.)

LUXADE.—518,306. **Preparations in powder form for making beverages.** F. W. HAMPSHIRE AND CO. (1927), LTD., Sunnydale Works, Sinfin Lane, Derby. February 25. (Associated.) (By Consent.)

WELLSDALE.—518,590. **Butter, cheese, canned fruits, and milk.** NURDIN AND PEACOCK, LTD., 59 to 65, Wells Street, Oxford Street, London, W. 1. February 25.

GALEN BRAND.—518,675. **Confectionery and chocolate.** THE SQUIRREL CHOCOLATE AND CONFECTIONERY CO., LTD., 83, St. Petersgate, Stockport, Cheshire. February 25. (By Consent.)

COUNTRY LIFE.—519,328. **Cheese.** DRIED MILK PRODUCTS, LTD., Central House, Finsbury Square, London, E.C. 2. February 25.

ICEBERG.—519,384. **Beverages (not alcoholic, not aerated, and not medicated) and preparations for making beverages.** E. WYER AND SONS, LTD., also trading as "Clayton Bros.," 140, East Hill, Wandsworth, London, S.W. 18. February 25. (Associated.)

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